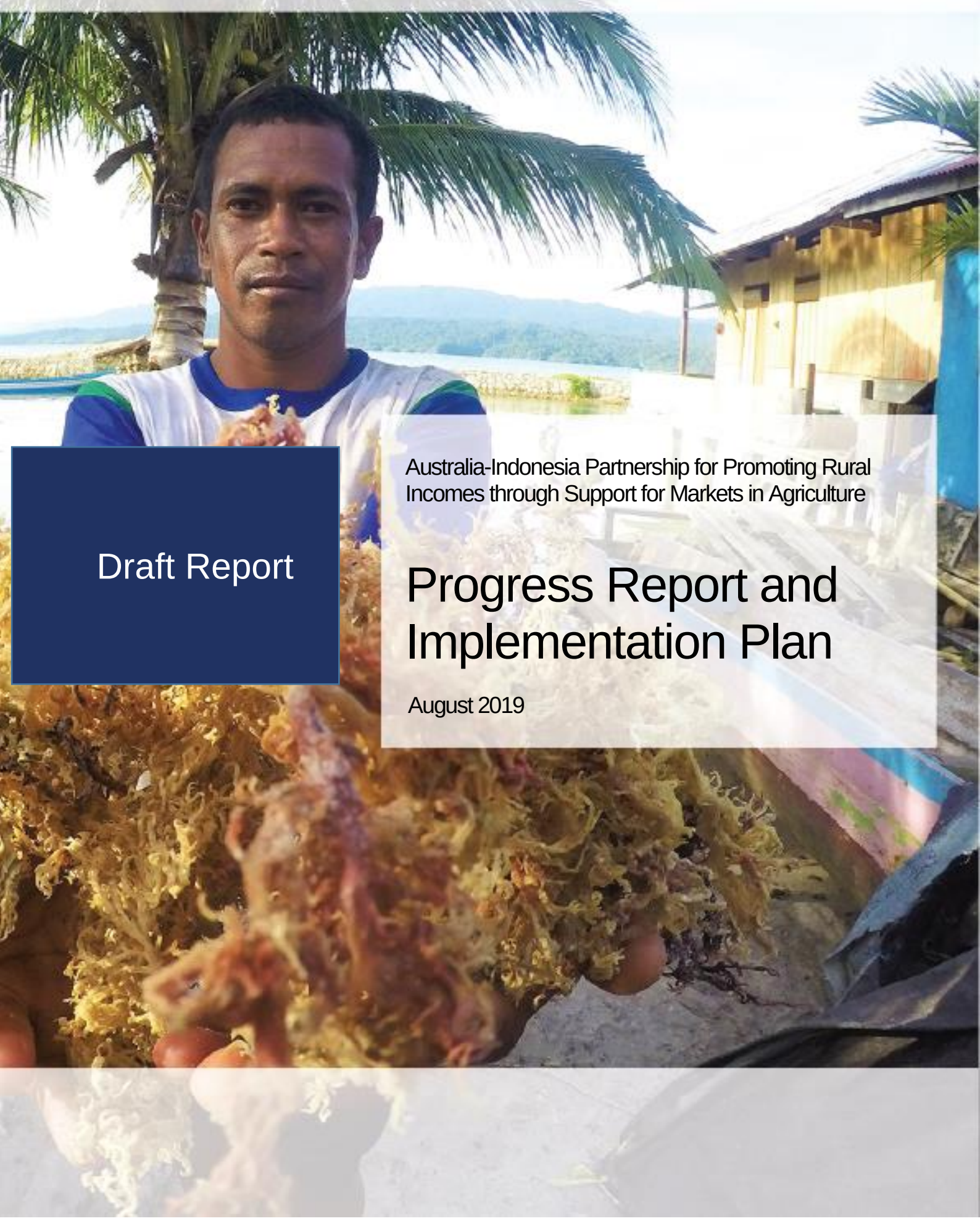
PRISMA
Australia-Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture

Kementerian PPN/ Bappenas

Australian Government



Draft Report

Australia-Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture

Progress Report and Implementation Plan

August 2019

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List of Abbreviations

ADB	Asian Development Bank
AIP-Rural	Australian-Indonesia Partnership for Rural Economic Development
ARISA	Applied Research and Innovation Systems in Agriculture
ASF	African swine fever
AUD	Australian dollar
Bappenas	Badan Perencanaan Pembangunan Nasional, or National Development Planning Agency
Bappeda	Badan Perencanaan Pembangunan Daerah, or Development Planning Agency at Sub-National Level
BCC	Behaviour Change Communications
Balitkabi	Balai Penelitian Tanaman Aneka Kacang dan Umbi
Bn	Billion
BPS	Badan Pusat Statistik, Central Bureau of Statistics (Indonesia)
BRI	Bank Rakyat Indonesia (an Indonesian state-owned bank)
BUMDes	Village Business Council
CJ	Central Java province
CV	*Commanditaire Vennootschap* (limited partnership)
DFAT	Department of Foreign Affairs and Trade (Australian)
DOC	Day-old chicks
EJ	East Java province
EMS	Environmental Management Strategy
FAO	Food and Agriculture Organization
FAW	Fall armyworm
FI	Financial institution
GAP	Good agricultural practices
GDP	Gross Domestic Product
GESI	Gender Equality and Social Inclusion
GHP	Good handling practices
G-HIPPA	Gabungan Himpunan Petani Pemakai Air, or Association of Water User Associations (of farmer groups)
GoA	Government of Australia
GOI	Government of Indonesia
GPP	Good processing practices
GRP	Good rearing practices
HEAT	Hostile environment awareness training
HH	Household
HIPPA	Himpunan Petani Pemakai Air, or Water User Association (of farmer groups)
HOP	Head of Portfolio
ICN	Intervention concept note
IDR	Indonesian rupiah
IP	Intervention plan
ISD	Intervention steering document
ISP	Intermediate service provider
K	Thousand
KPI	Key performance indicator

KUB	Kampung Unggul Balitnak, Balitnak's superior kampung' chicken
LTA	Long term advisor
M	Million
MIS	Management information system
MMAF	Kementerian Kelautan dan Perikanan, or Ministry of Marine Affairs and Fisheries
MoA	Kementerian Pertanian, or Ministry of Agriculture
MSD	Market systems development
MT	Metric Tonnes
NAIC	Net attributable income change
NGO	Non-governmental organisation
NTB	Nusa Tenggara Barat (West Nusa Tenggara province)
NTT	Nusa Tenggara Timur (East Nusa Tenggara province)
OPA	Outcome performance assessment
OPV	Open pollinated variety (a hybrid seed)
PA	Papua province
PPI	Progress out of poverty index
PPP	Purchasing power parity
PMT	Project Management tool
PRISMA	Promoting Rural Income through Support for Markets in Agriculture
PRIP	Progress Report and Implementation Plan
PT	Perseroan Terbatas (limited liability company)
QMT	Quality management tool
Ristekdikti	Kementerian Riset, Teknologi, dan Pendidikan Tinggi, or Ministry of Research, Technology and Higher Education
RML	Results measurement and learning
RPJMD	Rencana Pembangunan Jangka Menengah Daerah, Mid-term Development Planning
SAFIRA	Strengthening Access to Finance in Rural Agriculture
SCP	Systemic Change Progress
SME	Small and medium enterprise
MSME	Micro, Small and Medium Enterpise
SROI	Social return on investment
SUSENAS	Survei Sosial Ekonomi Nasional, Social Economy National Survey (Indonesia)
TIRTA	Tertiary Irrigation Technical Assistance
Tn	Trillion
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VCF	Value Chain Finance
WA	West Papua province
WEE	Women's economic empowerment

Executive summary

BACKGROUND

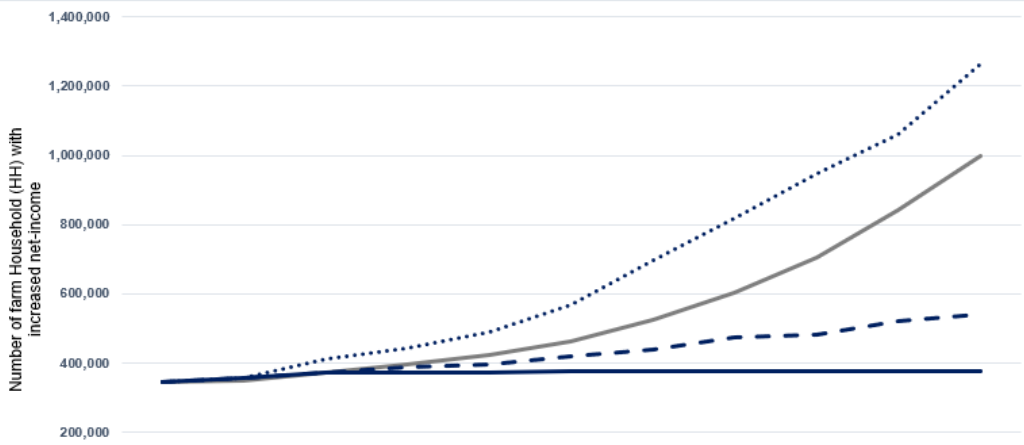
The objective of the Australia-Indonesia Partnership for Rural Incomes through Support for Markets in Agriculture (PRISMA) is to achieve a sustainable 30% increase in the net incomes of 1,000,000 smallholder farming households (HHs) in Indonesia by the end of 2023, including the HHs benefited in Phase 1. PRISMA builds upon the achievements of and lessons learned by the Australia-Indonesia Partnership for Rural Economic Development (AIP-Rural) and its value chain (Phase 1), finance, irrigation and research components. It is one of the largest market systems development programs in the world, and addresses the most significant constraints to rural income growth, boosting farmer incomes in six provinces in Eastern Indonesia.

This report presents PRISMA's key implementation activities delivered throughout January to June 2019. To avoid repeated information, it does not cover the operational and financial information of the inception period (January-March 2019) as this has been reported in the First Year Implementation Plan & Mobilisation and Inception Report. However, for purposes of clarity, it features some relevant information on portfolio progress and development.

PROGRESS

1. **PRISMA signed a total of 17 new contracts.** These include 3 with new partners and 3 interventions in Central Java (CJ) in Mung Bean, Beef and Finance, and are projected to reach 163,403 HHs. **In addition, PRISMA approved 6 intervention plans (IPs) and 2 intervention concept notes (ICNs)**.
2. **PRISMA reached 10,722 additional beneficiary households against a target of 4,549,** resulting in a cumulative outreach of 355,723 HHs (230,746, or 64.9% under USD 2.5 2005 PPP, against a target of 60%) since the beginning of AIP-Rural.
3. **The current expected cumulative outreach projection is 1,263,729 HHs** by the end of 2023, exceeding the target for the phase of 1,000,000.

FIGURE 1: PRISMA OUTREACH TRAJECTORY AND INTERVENTIONS



	Y18 S2	Y19 S1	Y19 S2	Y20 S1	Y20 S2	Y21 S1	Y21 S2	Y22 S1	Y22 S2	Y23 S1	Y23 S2
	Actual	Actual	Projection	Projection	Projection	Projection	Projection	Projection	Projection	Projection	Projection
PRISMA outreach trajectory	345,001	349,550	373,108	397,857	423,796	463,968	523,885	602,732	706,444	841,405	1,000,000
Completed interventions	345,001	355,723	371,593	374,277	374,377	375,877	376,077	377,577	377,577	377,577	377,577
Completed + new interventions	345,001	355,723	372,685	388,975	395,113	418,935	438,814	472,690	480,744	520,154	540,980
Completed + new + pipeline interventions	345,001	355,723	410,452	444,028	492,019	568,489	697,908	820,144	947,369	1,059,585	1,263,729

4. **The expected cumulative outreach for completed, existing and new interventions is 1,262,729 HHs** by the end of Y18S2. A projection of people living under a certain poverty line currently makes no sense as new lines were introduced along with new Simple Poverty Scorecards® (SPS), replacing those of the Progress out of Poverty Index® (PPI) in Y19S2.

5. **Average NAIC per farm household was 264.8%, up from 252% at the end of first phase of AIP-Rural,** significantly above the target of 30%. Total NAIC for all farming HHs in Y19S1 is IDR 2.071 Tn (AUD 207.18 M), with cumulated average NAIC per HH at IDR 5,201,145 (AUD 520.11).

6. **An interpretation of the changes to the other indicators is currently not meaningful due to the low level of these changes.**

TABLE 1: PRISMA KEY PERFORMANCE INDICATORS

KPI tracking		Actual cumulative Y19S1	Actual Y19S1
KPI1	# Outreach (all farming HHs)	355,723	10,722
KPI1a	# Outreach (< USD 1.90 PPP)	132,276	3,187
KPI1b	# Outreach (< USD 2.50 PPP)	230,746	6,411
KPI2	Net income impact in IDR (all farming HHs)	2,071,803,272,704	128,759,238,715
KPI2a	Net income impact in IDR (< USD 1.90 PPP)	747,152,233,990	39,789,315,085
KPI2b	Net income impact in IDR (< USD 2.50 PPP)	1,289,800,246,551	75,404,958,592
KPI3	# ISPs	9,746	-
KPI4	WEE effectiveness	0.77	0.77
KPI5	ISPs' increased turnover in IDR	686,318,544,453	4,055,963,600
KPI6	# Intervention partners (public and private sector partners)	183	3
KPI7	Private partners increased turnover in IDR	3,946,801,456	3,946,801,456
KPI8	Additional/more inclusive investment in IDR	1,030,342,441,391	86,915,019,475
KPI8a	Additional/ more inclusive investment in IDR (public and private sector partners)	133,087,264,762	1,385,262,450

7. **Due to the low number of HH reached and the low level of field activities, all indicators changed only slightly (measured no against total intervention costs).** Intervention costs per HH fell to AUD 153.03, from AUD 153.91 at the end of Phase 1; social return on investment increased to AUD 3.81, up from AUD 3.66; investment leverage from partners fell slightly to .024, down from 0.25; total investment leverage increased due to continuing partner investments from 1.78 to 1.89.

MANAGEMENT RESPONSE FOR THE NEXT TWELVE MONTHS

8. **PRISMA will strive to conclude 26 contracts and develop an additional 4 IPs (total 30) and 1 ICN (total 13).** The total outreach of the 31 IPs is estimated at 505,109 HHs.

9. **To enable PRISMA to focus more on systemic change rather than numbers, in Y19S2 we will use the Systemic Change Progress (SCP; see 5 years strategic plan for details) for the first time.** If this test works well, we will start using its 4 levels of systemic change to set targets.

10. **To increase our partners' level of independent geographic expansion and adaption, we will continue to use the Kaizen tool. However,** we will need to improve how we use the information thereby obtained for decision-making and implementation.

11. **We will intensify our capacity building for all teams and HoPs related to the new gender strategy and its tools**. They have been proven to be a trove of highly relevant information for strategy development

12. **To better understand the ecosystem of ISPs, we will consolidate and quantitatively analyse all data** available in our system. This will be followed up by a qualitative assessment in Y20S1 and compliments the Kiosk study done last year.

13. **To increase implementation capacity, we will hire a seventh cohort of approximately 15 staff.** However, we will need to monitor implementation spending carefully in order to determine whether it will be possible to operate at that size, as the implementation budget is much smaller than in Phase 1.

1 Broader policy, institutional and environmental context

In April 2019, Indonesians voted to keep President Joko Widodo in power for another five years in the world's largest single-day election. The incumbent has promised to implement bolder reform measures to improve the country's economy. Jokowi's first term has been friendly to businesses in general and his second term should be no different. All eyes are now on his choice of cabinet ministers which will be revealed in October 2019. A policy shift is possible, should Jokowi decide to appoint a new agriculture minister, for example.

Indonesia's economy continued a steady growth trajectory in 2018, with GDP increasing by 5.2%. Although lower than the 5.4% target for 2018 set by the Government of Indonesia (GOI), this growth rate represents decent performance against the background of regional economic slowdown. Average GDP growth for the region's five major economies (Indonesia, Malaysia, Philippines, Singapore and Thailand) slowed for the first time in three years as a result of escalating US-China trade tensions and the knock-on impacts weakening local currencies. These factors contributed to Indonesia's widest ever current account deficit in 2018, which in turn resulted in a rapid depreciation of the Indonesian rupiah (IDR) after substantial sell-offs of IDR in currency markets. The GOI responded with a range of measures to curtail imports (such as mandating the increased use of biodiesel) and by increasing taxes on 1,147 imported goods. Expected GDP growth for 2019 is projected at 5.2%, with a small increase to 5.3% forecast for 2020. PRISMA expects its private sector partners to find the business environment more conducive to investment and further expansion.

Government restrictions on rice imports were relaxed in response to more accurate data on national rice production. Indonesia imported 2.5 MTs of rice in 2018 – the highest amount in recent years, and a significant increase from the 0.3 MTs imported in 2017. Domestic prices for rice continued to increase in 2018, despite the Ministry of Agriculture claiming that the volume of domestic rice production was 'more than enough to feed the nation'. The government statistics agency (Badan Pusat Statistik, or BPS) has developed a more accurate production forecasting methodology with the support of the vice president; this new method reduced Indonesia's rice production forecast for 2018 by 30.3%. This gives PRISMA an opportunity to develop a rice sector which is focused on sustained production, improved seed production, and reduction of losses in processing.

The GOI has stated its intention to rely on data from BPS as the basis for future policymaking; BPS will begin forecasting maize production in 2019. While the new data on domestic production has contradicted the Ministry of Agriculture's claims of self-sufficiency, the availability of more accurate data is a positive development, particularly combined with the indications of increased appetite for evidence-based policymaking in Indonesia's agriculture sector. PRISMA's sector analysis will improve as a result of using this data, as BPS is one of the most important sources of data.

The GOI has maintained its agriculture subsidy level in 2019; however, the overall agriculture budget is trending downwards. The Ministry of Agriculture's annual budget for 2019 is AUD 2.16 Bn, a modest reduction from 2018 (AUD 2.26 Bn). The ministry's budget has steadily decreased year-on-year since 2015, when it peaked at AUD 3.28 Bn. Key expenditure categories within the budget have remained consistent, with the biggest single category being the food crop self-sufficiency program (28%), followed by the agriculture mechanisation and irrigation department (23%). The fertiliser subsidy is not part of the Ministry of Agriculture's budget; it is expected to cost AUD 2.99 Bn in 2019, a slight increase from AUD 2.85 Bn in 2018 mainly due to the weakening Indonesian rupiah, which has increased the cost of importing raw materials. Among other PRISMA sectors, Maize, Rice and Seaweed have higher levels of government subsidy.

Across the six provinces PRISMA works in, agriculture is still the key local government policy priority. Economic and productivity development of key agricultural commodities to meet self-sufficiency targets is the priority focus for the six provincial governments with which PRISMA will interact. The program has seen positive developments, with the newly elected governor in NTT indicating an openness to inputs and to

recommendations from PRISMA staff to support the ongoing implementation of its five-year agriculture strategies. Initial discussions with local government representatives in the program's new province of Central Java has also indicated their strong interest in identifying opportunities for improved policy, and a demand for knowledge and best practice from PRISMA.

Adverse effects of climate change, including changing weather patterns, continue to be a significant and growing threat to Indonesian farmers. Prolonged dry and rainy seasons as well as more extreme weather have been observed across the country, increasing uncertainty and risks to doing business in agriculture. There is an increasing pressure on farmers to increase production, income and food security, while simultaneously improving the efficient use of farm inputs such as water, fertiliser and pesticide.

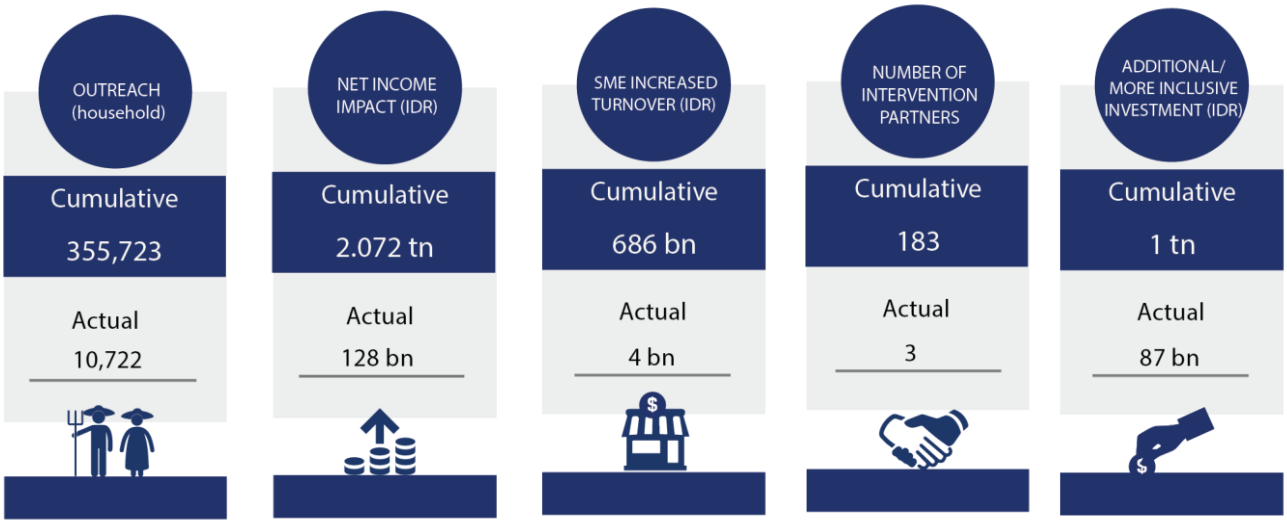
2 PRISMA - portfolio management and monitoring

2.1 Portfolio and intervention development progress

A total of 17 new contracts were added in the first semester of 2019, including 3 with new partners and 3 interventions in Central Java (CJ) in Mung Bean, Beef, and Finance. The Maize sector has established 4 new interventions. Between Finance and ICT there are plenty of overlaps; in total, the two sectors established 4 new interventions, 2 of which reflect the expansion of the BISI-YARO model which the company wants to use countrywide. The Soil Treatment sector (previously named 'Fertiliser') added 3 new interventions across East Java, NTB, and NTT. PRISMA also started 2 interventions each in the Beef and the Mung Bean sectors and 1 in the Peanut sector. The launched interventions are projected to reach 163,403 HHs.

In addition, PRISMA developed 6 approved IPs and 2 approved ICNs. These consist of 2 IPs in Irrigation and 1 each in Soil Treatment, Peanut, Finance, Seaweed and Pig, and ICNs in Rice and Mechanisation.

2.2 Progress of Key Performance Indicators



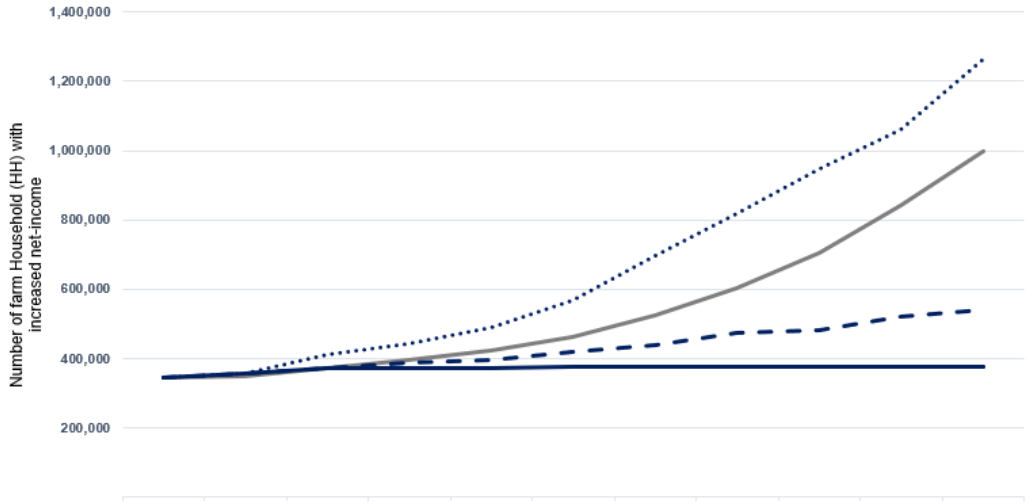
OUTREACH

In the first semester of Phase 2, PRISMA has reached an additional 10,722 HHs against a target of 4,549 HHs, leading to a cumulative outreach of 355,723 HHs (of which 230,746 or 64.9% [against a target of 60%] earn under USD 2.5 2005 PPP) since the beginning of AIP-Rural. By 2023, we currently expect to reach around 1,263,729 smallholder farming HHs, whose incomes will increase as a result. The contributions made by PRISMA's Maize, Pig, Crop Protection, Rice, Peanut and Beef sectors are:

- **Maize NTB +3,231 HHs:** the majority of outreach this semester was attributed to the AIP-Rural intervention with PT BISI. PRISMA will analyse maize interventions with other partners during the next semester.
- **Pig NTT +2,043 HHs:** this increase is largely a result of impact recorded from feed interventions in Flores, where pig feed sales have recovered after the hog cholera outbreak. Other changes will be measured next semester together with the impact of the business expansion of one of PRISMA's previous partners (PT Sinar Terang Madani) to South Sulawesi, an indication of sustainability and systemic change resulting from PRISMA's intervention.
- **Crop Protection EJ +1,113 HHs:** impact resulted primarily from the introduction of crop protection product interventions in collaboration with private sector partners PT Danken (593 households) and PT Agricon (520 households). PRISMA will analyse interventions with other partners next semester.
- **Rice EJ +1,020 HHs:** the first semester's impact stems from the hybrid seed intervention with PT Agrosid Manunggal Sentosa which will be scaled up in Phase 2.
- **Peanut EJ +963 HHs:** the first semester's impact achieved by the Peanut sector came from introducing crop protection to peanut farmers in East Java; most of this can be attributed to the program intervention with Syngenta (922 HHs).
- **Beef EJ +887 HHs:** in this intervention, PRISMA partnered with PT Nutrifeed. The original intervention was implemented only in East Java; however, at the end of AIP-Rural the partner started to replicate the business model in Central Java, again, an indication of the systemic change that PRISMA is effecting.

Overall, a higher spillover from phase 1 was expected. Currently we are not yet sure whether it either did not happen or whether we have not captured it yet. The main reasons are (1) some of the impact assessments will be conducted next semester; (2) apart from a few exceptions, we were unable to track impact from systemic change due to a reduced team size at the beginning of the phase; (3) crowding-in is reaching saturation point in our two star sectors, Maize and Pig; (4) many of our partners have not yet reached the level of independence needed to expand either geographically or to other crops. The latter in particular needs to be made an area of further investigation as it is crucial for us to understand the level of sustainability and resilience.

FIGURE 2: PRISMA OUTREACH TRAJECTORY AND INTERVENTIONS



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Completed + new + pipeline interventions	345,001	355,723	410,452	444,028	492,019	568,489	697,908	820,144	947,369	1,059,585	1,263,729

Outreach projection up to the end of the phase is currently 1,263,729 HHs. However, this is a preliminary estimate, with high volatility expected during the early years of the phase. When we better understand our new

partners and interventions, more confident and precise forecasts will be possible. Until then, this number should not be overinterpreted.

A projection of the numbers of people or HHs living under a certain poverty line makes currently no sense as new lines were introduced and new Simple Poverty Scorecards® (SPS), replacing those of the Progress out of Poverty Index® (PPI), will be developed for all provinces, districts and subdistricts in Y19S2.

INCOME

The average NAIC per farm household is 264.8%, further up from 252% at the end of first phase and significantly above the target of 30%. The NAIC of only four sectors is below the 30% target: Vegetable (29%), Cashew (22%), Coconut (18.2%) and Seaweed at (11%). Fourteen sectors have achieved between 50% and 99%, and ten above 100%. More important, especially in terms of behaviour change and sustainability, is the cash increase. An Indonesian person in extreme poverty (USD 1.90 2011 PPP based on 2018 SUSENAS data) consumes a food basket priced at IDR 10,748 or IDR 327,814 per month. Based on an assumed average family size of four, this would result in IDR 1,3141,256 per month, and a respective income increase is therefore assumed to be a high motivation to change behaviour. Looking at both phases of program implementation, 21 out of 29 ever-measured sectors achieved above this value (the remaining eight account only for 20,802 households, six of which were dropped, and three fundamentally restructured).

Total NAIC for all farming HHs in Y19S1 is IDR 2.071 Tn (AUD 207.18 M), with a cumulated average NAIC per household of IDR 5,201,145 (AUD 520.11). The average NAIC per HH < USD 2.50 2005 PPP is IDR 4,969,588 (AUD 496.96).

The same picture is reflected in the semester result, with Pig leading at IDR 98.31 Bn (AUD 9.83 M) followed by Maize at IDR 9.76 Bn (AUD 976 K). Due to the low absolute number of HHs, further analysis is not relevant.

OTHER KPIS

KPI3 and KPI5: no new intermediate service providers (ISPs) were engaged but the ISPs engaged in the six subsectors measured this semester increased their turnover by a total of IDR 4 Bn (AUD 405 K). Towards the end of the first phase, PRISMA concluded from observations in several sectors that ISPs, specifically agriculture kiosks, can play a very active role, not only in promoting new products but also in providing information to farmers, and that PRISMA needs to better understand their ecosystem.

KPI4: WEE effectiveness (that is, the ratio between relative female access divided by the relative female participation in agriculture) is 0.77; the ideal value is 1. This semester, PRISMA measured KPI4 in three interventions. Two of them had higher relative access (for example, to information and training) than effective participation, implying that male farmers were under-represented in the capacity building. The third sector showed a ratio of 0.08, a result of 38% representation and 3% participation (access); in other words, female farmers participated but did not become trained. The explanation for this is that the intervention addresses pesticide use, a part of agricultural work which men tend to do. As participation is measured after use (and therefore long after access), the program needs to adjust measurement of this indicator to ensure it is observed over time.

KPI6: PRISMA added three new private partners this semester: two ICT start-ups (Crowde and Hara) and one off-taker (PT GarudaFood).

KPI7: the turnover of PRISMA partners increased by IDR 3,946,801,456 (AUD 394 k); IDR 89 M**(**AUD 89 K) was contributed by PT Garuda Food, IDR 3.74 Bn (AUD 374 K) by PT Nutrifeed and IDR 113.78 M (AUD 11.4 K)by PT EWINDO in Papua. This indicator is new and might become valuable when compared with targets and assessed over time per partner.

KPI8 and KPI8a: cumulative co-investment by market actors reached IDR 1,030,342,441,391 (AUD 103 M) from up by IDR 86,915,019,475 (AUD 8.6 M); IDR 1,385,262,450 (AUD 138 K) of this was contributed by one private partner.

TABLE 2: PRISMA KEY PERFORMANCE INDICATORS[1]

KPI tracking		Actual cumulative Y19S1	Actual Y19S1
KPI1	# Outreach (all farming HHs)	355,723	10,722
KPI1a	# Outreach (< USD 1.90 PPP)	132,276	3,187
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KPI5	ISPs' increased turnover in IDR	686,318,544,453	4,055,963,600
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VALUE FOR MONEY INDICATORS[2]

Investment per HH (total intervention costs) has fallen insignificantly to AUD 153.03, from AUD 153.91 (AIP-Rural) the at the end of the Phase 1. The sidewards movement can be explained by the relatively low additional outreach.

Social return on investment (total intervention costs) increased to 3.81 this semester, up from 3.66 in Y18S2. The key sub-sector contributing towards this indicator was Pig NTT with SROI of 20.1 for 775 HH.

The partner investment leverage (total intervention costs fell slightly from 0.25 to 0.24. The main reason were the very low investments as there were hardly any activities after the restart on the program.

The total investment leverage (total investment costs) increased from 1.78 to 1.89. This increase is mainly due to the on-farm investments.

2.3 Portfolio analysis

PRISMA's portfolio currently comprises a total of 17 active interventions compared to 88 (not including ARISA, TIRTA and SAFIRA) in the middle of last year. This low level of ongoing activities is mainly caused by low allocation of funds in the financial year 2018-19. Instead of designing and developing new interventions from July 2018 onwards and signing the first contracts in October, we could only start developing the new portfolio from February onwards. Portfolio development was further hampered by the administrative delays to visas being issued for expatriate staff (refer also to Section **Error! Reference source not found.**.4), which meant that the most skilled staff members were unable to engage in the program fully for the first five to six months of the program. However, 7 other interventions reached IP stage and the teams are in the process of negotiating contracts, and in an 2 additional sectors ICNs were approved.

[1] PRISMA carries forward most of the KPIs from the first phase, and KPI1 and KPI2 now have sub-KPIs to capture outreach and income change among households living in extreme poverty (below the USD1.90 per day PPP poverty line).
KPI4 focuses on the program's ability to reach female farmers through its activities; WEE effectiveness is defined as percentage reduction in the gap between actual female participation in the sector, and female access to innovations.
The program dropped several indicators (number of innovations, the number of initiatives taken by government to improve the business enabling environment), modified outreach indicators to include extreme poverty and added WEE effectiveness, number of businesses crowding in and responding, and policy engagements.

[2] **All value-for-money reported in this document pertains to total intervention cost.** Please see Annex 1 (sector summary) for more detailed information of value-for-money according to sector.

So far interventions have been started in only 7 sectors: 4 in Maize, 3 each in Finance and Soil Treatment, 2 each in Mung Bean and Beef, 1 in Peanut and one in ICT. In Mung Bean and Peanut, PRISMA currently partners with PT EWINDO and PT GarudaFood respectively. In Beef we resumed the partnership with Nutrifeed and expanded to Central Java. In Maize we continue to work with Corteva Agriscience in Madura and East Java mainland, and in ICT we work with HARA, an ICT start-up company. The finance interventions are in collaboration with two other technology companies and include provision of information and linkages to off-takers.

Against the background of a high staff turnover, new province and sectors, PRISMA had to restructure its portfolio. We now have six portfolio teams, and have added Policy, Mechanisation and Poultry as sectors. Dairy, Irrigation and Finance were taken over from AIP-Rural. To address a lack of communication between teams identified by staff and management as a concern at the end of Phase 1, we used the opportunity of the restructuring to address this issue, by (1) not reflecting synergies in allocation of sectors to portfolios so that staff are forced to exchange across portfolios, and at the same time by (2) seating teams from different portfolios next to each other, in order to make communication easier. This is to ensure staff get involved in an increased number of different sectors across portfolios.

All interventions are now embedded in their own individual five-year sector vision. These visions were developed in line with a new guideline and use a similar dimension as the new SCP tool. All visions were reviewed and, together with the planned interventions, provide the basis for the QMT.

Using the revised QMT scoring, the June 2019 strategy meeting included not only active interventions but also all planned ones. The analysis showed an overall improvement in strategic orientation, but also a clear need in several sectors to improve the strategies. We decided to push 6 interventions in the Irrigation, Rice, Mung Bean, Beef, Maize and Seaweed sectors; 9 interventions will need some changes; 5 were let flow; and 12 have to make significant changes. Overall, Maize, Irrigation, Seaweed, Beef, Mung bean, Mechanisation, Finance and Soil treatment sectors were on track and Pigs, Finance, ICT, Dairy, Crop Protection, Vegetable and Coconut sectors needed improvement in terms of sector vision, strategy and intervention design. Sectors which needed further analysis before finalising the vision and strategy are Vegetable, Coffee, Poultry and Policy.

PRISMA decided not to club together seed and feed related interventions in larger sectors yet. The main reason for this is that we still lack experience in some of the current sectors (Poultry, Dairy, Rice, Mung Bean and Irrigation) which prevents us from understanding potential synergies and higher-level issues. However, topics such as seed imports or subsidies can potentially be addressed in future policy engagements.

Several small sectors will potentially be removed soon, but as the example of Seaweed demonstrates, there can be very positive surprises. We regard the plans in Coffee as a last attempt and Dairy might get consumed by Beef. Coconut remains difficult and Shallot, Cashew and Soybean interventions were dropped between the phases.

Fall armyworm (FAW) and ASF are two topics which have become not only major risks for the program, but also areas of first policy engagement. PRISMA discussed the appearance of the FAW in Indonesia with its crop protection partners and alerted the Food and Agriculture Organisation (FAO) and the GOI Ministry of Agriculture (MOA), thereby triggering a faster recognition of the danger that the pest might pose to maize, sugarcane and rice farmers as well as to food security. We also initiated talks with the relevant sections at the MOA to prepare the country for the arrival of ASF, and are in the process of facilitating the coordination of stakeholders.

FIGURE 3. NEW APPROACHES IN PRISMA PHASE 2

2.4 Highlights, challenges and lessons learned

The largest internal challenge in the build-up of the portfolio was the loss of good staff. The main reasons for staff not joining the new phase were contracts not being extended by PRISMA, unrealistic salary expectations, and long-planned professional or personal changes delayed in expectation of a significant severance payout. The program responded by pushing through the hiring and formal training of Cohort 6, comprising 28 staff.

A highlight was the positive impact of the work of the strategic working groups done in Y18S2 by our staff. Many areas have brought us forward strategically, including in the development of interventions. The SCP development enabled us to use the lessons learned in designing and assessing the new interventions. A breakthrough in the gender and social inclusion strategy has significantly contributed to a now mainstreamed approach to sector analysis which has resulted in a multitude of improvements to interventions.

2.5 Management response

PRISMA will strive to conclude 26 contracts and develop additional 4 IPs (total 30) and 1 ICN (total 13). The total outreach of the 30 IPs is estimated at 505,109 HHs. The level of confidence in these projections of course remains low as we still lack experience in many areas.

To address the absence of the expatriate managers, PRISMA appointed an interim management team consisting of Indonesia HOP and PBC to take on the role of Team Leader and expatriate HOPs. The interim management team has managed the program start and development of the opening portfolio very successfully with great efforts and commitment.

To enable PRISMA to focus more on systemic change rather than numbers, we will use the SCP in Y19S2 for the first time. If this test works well, we will start using the 4 levels of systemic change for target setting, and teams would then need to analyse the underlying indicators to understand where they need to invest their resources and what to do best to change interventions in order to achieve greater systemic impact.

To increase our partners' level of independent geographic expansion and adaption, we will continue to use the Kaizen tool. We have not used this tool in Y19S1, but did so during the semester before, and will update the information in Y19S2. What we need to improve is the use of the information for decision-making and implementation.

The new gender strategy and its tools have been proven to be a trove of highly relevant information and we will intensify our capacity building for all teams and HoPs in this area. Hybrid rice for instance needs a lower level of fertiliser and will not perform well if the dosage is exceeded. However, many farmers who also plant hybrid maize do not believe this, because for maize more fertiliser is needed and because some government and fertiliser extension workers do not know this, and farmers tend to believe them. Fertiliser is being bought and applied mostly by men; however, women are involved in decision-making and manage the household money. The decision about the seed is strongly based on whether women like the taste of the produce or not. This means that although men buy seed, women need to be involved and need to understand how much money they can save when they hand over the money for fertiliser.

To better understand the ecosystem of ISPs, we will consolidate and quantitatively analyse all data available in our system. This will be followed up by a qualitative assessment in Y20S1 and compliments the Kiosk study done last year. The Kiosk database itself is already being used by several teams for their intervention strategies. Its final use will be determined in a hackathon in Y19S2.

To increase implementation capacity, we will hire a 7th cohort of approximately 15 staff. The phase budget is calculated based upon an assumption of 145 staff and we are well within this budget. However, we will need to carefully monitor implementation spending to be able to determine whether it is possible to operate at this size, as the implementation budget is much smaller than in Phase 1.

3 Cross-cutting issues

3.1 Gender equality and social inclusion

In the past semester, substantial progress has been made to PRISMA's gender equality and social inclusion (GESI) strategy, highlighted by the development of a strategy document. Based on the program's existing gender strategy, this document incorporates the progress made in the previous phase in gender and other areas of social inclusion, aligned with PRISMA's vision which focuses on building resilient market systems through increased inclusion. It summarises the program's two-year and five-year targets in each of the neglected market segments (women, people with disabilities, youth, and the indigenous peoples of Papua) and outlines the commercial lens approach that PRISMA is taking to ensure that increases in income and productivity stimulated by its interventions are inclusive of and beneficial to these consumer groups. Highly essential to this document is its practicality and usefulness; it is therefore constructed by organising its chapters based upon what is most important for different audiences, placing chapters for staff upfront. The strategy will be introduced during a PRISMA town hall meeting at the beginning of July 2019 and circulated to all implementation staff and managers through parallel capacity building sessions.

A consumer assessment guideline and consumer segmentation tool has been launched to better mainstream social inclusion analysis at the intervention design stage. In addition to the gender division of roles and decision-making, the guideline assists implementation teams to collect qualitative data with an emphasis on farmers' behavioural aspects (the drivers and barriers impacting on them, for example), as well as media and channel preference. The discussion points are designed in such a way as to ensure their utility in intervention design and to provide promotional activity advice for partners. Based on staff inputs, some existing gender tools have been tweaked to accommodate simplicity and suitability within non-marketing-focused interventions. At the same time, as marketing remains a focus in many interventions, the revised tool

incorporates the 4As principle in rural marketing to provide a framework for designing activities. It also includes a slide on Women's Economic Empowerment (WEE) impact projection, aimed at identifying positive impact and mitigating any negative risk of interventions.

One of the program's two-year goals for WEE is the pilot of a women-targeted intervention (WTI), aimed at addressing gender-related constraints that female farmers face to accessing agricultural products. PRISMA is currently finalising a WTI by partnering with Arisan Mapan, a GoJek-owned company which provides access to products for low income female communities through digitally-supported rotating savings groups. This initiative has the potential to address the persistent barriers that women face which PRISMA has identified through its interventions, regarding affordability, accessibility and capacity, with the aim of improving household agriculture productivity. These challenges will be addressed through providing a financing option allowing female household members to purchase large ticket items, a free door-to-door delivery service for any of the company's products, and capacity building through its online and offline platforms. PRISMA is finalising the IP and expects a partnership agreement to be signed by the end of August 2019.

Integration of GESI into the results measurement system is one of driving factors behind ensuring mainstreaming at the monitoring and learning stage. During this semester, the GESI and RM teams held a joint workshop to mainstream gender analysis in the program's internal monitoring and reporting tools, which include KPIs, QMT, the SCP rubric, the intervention steering document (ISD) (as part of the Cross-Cutting Issues sheet), WEE impact measurement, and the RM Manual. A new KPI for gender (KPI4) has been established to measure the effectiveness of an intervention by dividing the ratio of female access by the level of female participation in activities related to the intervention. For the QMT and SCP rubric, five new indicators were added to provide a score for the quality of gender analysis and inclusiveness of business models. The first two indicators aim for the integration of the stock-take procedure conducted in the last two semesters of the previous phase into the current results measurement system.

The idea of making the ISD a one-stop data collection point requires more complete information to be included in the document. To address this, in a new design, cross-cutting issues information has been separated on to one sheet. Gender aspects here include a record of the division of labour and control related to the intervention, along with the commercial business case and its feasibility. Also, gender-inclusive activities documented in the results chain are interlinked with their potential WEE impact. Finally, risk mitigation of any negative WEE impact also needs to be elaborated.

WEE impact measurement will be conducted through impact assessment at the intervention level and qualitative study at the subsector level. This semester, to reinforce understanding among PRISMA staff and partners, the program will highlight the commercial relevance of each WEE dimension to provide the potential business context of WEE in addition to spill over empowerment impact. The elaboration of each WEE dimension's definition, rationale, commercial relevance, unit to be measured, and measurement methodology is described in the RM manual document, with the aim of addressing the challenges in measuring and demystifying WEE that the program faced in Phase 1.

To further improve PRISMA's understanding of GESI, three studies are currently being undertaken. Firstly, a study of the impact of female agents' employment on private sector partners' sales and women's economic empowerment, which will be implemented by a market research firm. Secondly, an indigenous community behavioural study is currently being conducted by a consultant with anthropology expertise, to map farmers in West Papua and Papua provinces based on land typology (high vs. lowland) and technology adoption level. Thirdly, a social inclusion study is being tendered to consultants with a strong qualitative consumer research background, which aims to develop a qualitative research guideline to identify neglected market segments.

3.2 Nutrition

The value of additional food production facilitated by PRISMA crossed the line of IDR 3.087 T (AUD 309 M). Unfortunately, we are unlikely to be able to estimate to what extent this contributed to better nutrition.

Last semester, PRISMA conducted preparation activities to mainstream nutrition-sensitive agriculture. As an initial introduction, a short presentation on the relevance of nutrition to PRISMA's context was socialised to staff in April 2019. This explained the seriousness of the undernutrition situation among pregnant women and children under five years old in Indonesia, as well as the growing trend of obesity among women of reproductive age and the multifactorial nature of the underlying causes of undernutrition. The presentation highlighted the agriculture sector, with its unique potential to influence the nutrition situation (either positively or negatively) and introduced PRISMA's nutrition strategy, which consists of negative impact mitigation ("do no harm") and strengthening nutrition impact.

A set of questions and their explanation was introduced and added to the Intervention Plan presentation template as a test slide to assist the sector teams and the panel in evaluating whether the proposed intervention has potential negative impact on nutrition. There were seven indicators in the form of questions, summarised from the DFAT Operational Guideline and the FAO Synthesis of Guiding Principles for Nutrition Sensitive Agriculture. These assess whether the intervention potentially increases the burden of women, compromises access to nutrient rich foods, increases hydrophilic vector-borne disease, increases exposure to agrochemicals, increases the risk of zoonotic diseases, increases risk of exposure to aflatoxin, and/or increases the possibility of unemployment among the landless.

PRISMA also conducted a series of discussion sessions with sector teams as a form of capacity and awareness building. The sessions shared the basic concept of nutrition and discussed the relevance of questions listed in the intervention plan, to identify the potential negative impact in each sector. The discussions concluded that further data is needed to enable staff evaluate the impact of certain GAP (for example, plant spacing) on the burden on women, of increased investment in cash crops on access to nutrient rich foods in remote areas, and of exposure of aflatoxin through animal feed. Staff also need guidelines to reduce risk to nutrition through careful area selection in promoting mechanisation, careful active ingredient selection and promotion of judicious use of agrochemicals, and promotion of animal health management and sanitation.

Considering DFAT's feedback on the progress of PRISMA's nutrition strategy development, in the next semester, the project plans to conduct the following activities:

- Simplifying the nutrition strategy to ensure overlap with the program mandate;
- Developing a nutrition-related constraints tree for each province and a guideline for choosing the relevant ways to contribute positively to nutrition environments, and
- Developing a nutrition evaluation strategy to capture impact.

The updated strategy will be presented to DFAT for approval in Y19S2. PRISMA will then devise the guidelines, tools, and capacity building activities necessary to roll out and implement the approved strategy.

To strengthen learning and explore potential collaborations, PRISMA has initiated discussions with CSIRO and other DFAT-funded programs and will follow up on this in Y19S2.

3.3 Environment

PRISMA has updated its Environmental Management Strategy (EMS) in order to better fit the program's new scope in the second phase, which merges components of TIRTA, SAFIRA and ARISA, as well as to incorporate DFAT's updated Environmental and Social Safeguards Policy (Feb 2019) and Environmental and Social Safeguard Operational Procedures (Mar 2019).

The updated strategy will enhance compliance with both Indonesian and Australian environmental policies. It will also enable a positive shift from a "do no harm" approach to a more proactive approach which seeks opportunities for PRISMA to document and capture positive environmental impact, as well as good practice on mitigating against the effects of climate change. The strategy emphasises the needs to ensure positive environmental impact by incorporating resilience-oriented indicators derived from a climate smart agriculture approach.

PRISMA will socialise the strategy within the project when it is finalised, subject to approval from DFAT. The environmental scoring and findings of the environment assessment will become an integral part of PRISMA's QMT, which will encourage and incentivise the intervention teams to take a more nuanced and proactive approach to environmental impact.

3.4 Applied research

Built upon the strong network developed in the first phase, PRISMA's applied research component provides technical support and scientific back-ups to sector teams, increase their access to proven research outputs, technical knowledge and expertise available at universities and government funded research institutions to strengthen their interventions. This includes stimulating collaboration between the research and development unit of private sector partners with public research institutes to test or catalyse development of new product that response to dynamics market needs.

Where relevant, the applied research unit will also support PRISMA's sector teams to link with research institutes and research initiatives to tap into their technical knowledge and off-the-shelf innovations products that may help private sector partners to take advantage of emerging market opportunities or target new market segments.

4 Quality assurance

4.1 Results measurement

Results measurement system continues to comply with the DCED Standard, and is planned to be audited in 2020. PRISMA will continue to measure and report impact from phase 1 interventions, focusing on measuring level 1 and level 2 systemic change. The DCED audit will review and assess interventions started under PRISMA and other AIP-Rural programs which have spill over impact in Phase 2. Preparation for the audit will be facilitated by Phitcha Wanitphon.

Research practice across the sector teams and results measurement teams was streamlined in order to develop the PRISMA Research Guideline. Phitcha helped the team to assess current practice and discuss best practice with PRISMA RML and implementation team. By end of June 2019, the guideline was finalised and ready to be disseminated.

The Results Measurement manual is being updated in order to fit with PRISMA's structure, objectives revised KPIs and SCP tool. The manual will accommodate definitions, measurement and calculation methods for new KPIs, and the improvement of monitoring tools. Cross-cutting issues (including WEE, poverty, disability inclusion, nutrition and environment) will be updated with reference to the new perspective and strategy for each topic.

A simple poverty scorecard will be developed for all six provinces, based on Survei Sosial Ekonomi Nasional (SUSENAS) 2018 data. PRISMA hired a consultant to produce, by the end of the first semester of 2019, a new Simple Poverty Scorecard using recent data, which is also being piloted in the first semester of 2019. The new scorecard will provide several poverty lines: 100% National, USD 2.50 PPP, and USD 1.90 PPP (global extreme poor poverty line). Due to changes to the poverty line and availability of new SUSENAS data, the former USD 2.50 PPP poverty line needs to be redefined. This may lead to changes to the contractual target of 60% outreach below USD 2.50 PPP.

In 2019, PRISMA will take pragmatic steps to shift staff and management behaviour towards greater use of data to inform decision-making. A PRISMA working group comprising management, and RM, MIS and sector team members, is developing a concept for building upon existing processes to establish an enhanced and improved culture of using data across the board. Steps will include a data literacy campaign, improving access to data though Power BI, integrated data platforms to perform deeper analysis, and more data-driven intervention design and monitoring systems.

PRISMA's QMT will be adjusted to accommodate the new KPIs, outreach and systemic change trajectories, and environment, policy, nutrition, disability and WEE indicators. PRISMA will continue using its QMT as a mandatory assessment tool for ICNs, IPs and subsector reviews, with adjustments for IP presentation.

4.2 Management Information System (MIS)

The MIS team has been developing a new Portfolio Management Tool (PMT) for PRISMA Phase 2. The new PMT accommodates new sectors and interventions, the new program intervention area of Central Java province, and PRISMA's updated KPIs and QMT. It will be deployed on a web platform using a cloud database, which provides better user accessibility and allows seamless access from remote areas and handheld devices.

The new ICN and IP Management Module, part of the Portfolio Management Tool (PMT), is at the stage of internal trial and testing. After trialling and testing, the module will be introduced to all staff in the second semester of 2019. The user guide for the module is being revised to ease the transition from the manual ICN and IP process. Other PMT modules (that is, the QMT, On-Going Intervention, Pipeline and BTOR modules) are being developed and will be introduced in the second semester of 2019.

MIS is preparing a data bank to store secondary sources, such as Survey Pertanian 2013 and Susenas 2018. MIS will collect the secondary sources, store them in the data bank, analyse the data based on request, and visualise it on the dashboard.

PRISMA is developing corporate function platforms and a contract management system, and the MIS team is separating the systems into smaller modules for better development process and maintenance. These modules will be introduced in the second semester of 2019, starting with the Human Resources module (others include Procurement, Administration, Contract, and Finance modules).

4.3 Communications

During the past semester, the Communications Unit has been socialising and implementing its newly revised Communications strategy. The main aim of the Communications Unit in 2019 is to establish products, channels and program profiling, and to integrate itself into supporting the program to achieve the expected impacts.

The Communications Unit has also been finalising the rebranding of collateral for use by the program, including use of the program logo and name in all program materials, a PowerPoint presentation template containing an introduction to the program, a program profile, stationery, a Graphic Standard Manual, and other relevant branded documents.

The program website is being revamped, based on recommendations made in Phase 1. The new website aims to improve user friendliness significantly, and to better cater to staff needs when communicating to targeted stakeholders. It is being redesigned to act as a vast information hub for the program's other communications channels, including social media. The Communications Unit pitched the revamped website to DFAT at the end of April 2019, and it is now being populated with content. The design is being finalised, and the new website will be officially debuted during the PRISMA launch event.

Behaviour Change Communications (BCC) were a strong area of focus in the previous semester and will continue to be throughout the second phase of program implementation. The Communications Unit, merging efforts with PRISMA's Market Segmentation working groups, is designing a new initiative which focuses on promoting marketing communications services to agricultural market players. Its strategy is to nurture marketing communications firms, build up their expertise in rural agriculture settings, and establish marketing communications expertise as a tradeable commodity accessible to agriculture stakeholders.

A main activity of the BCC initiative is the development of a "Cross-Sector Special Study on Effective Communications Channels". Using a quantitative approach, the study will assess farmers' communications preference and accessibility. It aims to understand the most effective channels, media and avenues by which to distribute information to the program's target audience, that is, farmers. It will also look further into the framing of key messaging and positioning in order to reach farmers effectively. This Effective Communications

Channels study will serve as a baseline to inform and guide the development of any marketing and communications strategy (in regard to both outreach and behaviour change) by PRISMA and its partners; it will be conducted in partnership with marketing communications partners.

5 Stakeholder relationship management

5.1 Government of Indonesia national and subnational agencies

Obtaining base credentials from Bappenas is vital to continue discussion with local government. Local government agencies are positively receptive of PRISMA program implementation in their respective regions. However, in relation to their management and alignment of resources, they have enquired about credential letters from Bappenas. These letters provide a vital basis for their strategic allocation of efforts, and are essential for avoiding duplication of program activities.

The Indonesian Medium-term Development Plan 2020 – 2024 on agriculture focuses on the improvement of supply, access and quality food crops through the implementation of strategies. The strategy includes improving food quality, security, fortification and bio-fortification; improving the availability of food from locally grown crops; improving agriculture productivity and quality of human resources; improving the sustainability of agriculture productivity and quality of human resources; and improving the management of agriculture for national food security.

Local development priorities in 2019 are relevant to PRISMA and important to stay abreast of. Local government has similar (or extended) priorities to the program, including poverty alleviation, regional economy competitiveness, and food security.

Agriculture remains a priority across the six PRISMA working provinces. The economic and productivity development of priority commodities remains the main focus of the six provincial governments; local government has expressed itself open to improvements and suggestions from PRISMA.

Following the implementation of the Indonesian government's 2018-23 Regional Mid-term Development Plan (*Rencana Pembangunan Jangka Menengah Daerah*, or RPJMD), the provincial government of East Nusa Tenggara (Nusa Tenggara Timur, or NTT) has developed a 'Grand Design of Dryland Agriculture Development" document. Its objective is to focus on NTT's leading agriculture sectors, including food crops, cash crops, horticulture, livestock and fisheries. PRISMA's activities are in line with the timeframe of NTT's midterm development planning, and will contribute to achieving MISSION-1 of the RPJMD, which is to increase community incomes.

5.2 Development partners (DFAT Programs) and civil society organisations

PRISMA will step up engagement with other DFAT programs and development actors. PRISMA has completed preliminary work to identify suitable programs and presented the findings to DFAT. There will be three streams of engagement: potential collaboration, cross-learning and exploration. Collaboration with other programs or actors (such as World Bank, ADB, USAID, UNDP and Policy Lab) will be focused on key areas of intersection, in particular gender, nutrition and policy. Initial contact with some of the identified stakeholders has been facilitated by the DFAT Rural Unit, and a program roadshow to meet with the remaining programs is being planned. PRISMA will continue to collaborate closely with the Rural Unit in supporting engagement with other DFAT programs and development actors.

PRISMA will seek potential collaboration with other non-governmental organisations (NGOs) with regard to disability, youth and nutrition. This initiative aims to deepen the program's understanding and to foster the impact of interventions in these areas. Maintaining PRISMA's core values (such as the application of the MSD approach and the need for the presence of a strong business case) will remain a priority, with these principles guiding and defining the program's types of engagement.

PRISMA has chosen NGO Yayasan Kalimajari as co-facilitator in potential interventions in the seaweed sector from July 2019 to June 2021, with a total grant of AUD 420k. In Phase 2, PRISMA's seaweed intervention revolves around improved seaweed seedlings, and will touch mainly on policy influences at the national level, the improvement of the seedling market system, and research on quality seedlings. To achieve this, PRISMA and Kalimajari will assume facilitative and advisory roles, and work through multi-stakeholder partnerships among seaweed market players. Through this new intervention, PRISMA expects to see changes to the policy and programs of the Ministry of Marine Affairs and Fisheries, and the work of development centres and research agencies which support the increased use of improved seedlings and their distribution to intermediary nurseries.

6 Operations and HR

6.1 Human resource management

During this reporting period the HR management systems were reviewed and updated including policies and procedures related to:

- recruitment, to ensure adherence to workforce and immigration regulations;
- retention, with a focus on retaining women and high performers;
- performance management, to better define KPIs and refine the program's core competencies, and
- a salary system, to provide staff with greater transparency and indicate pathways for promotion and salary increases.

These new policies and procedures have been socialised to staff in a series of townhall meetings and as part of the induction training for Cohort 6 of new staff.

STAFF RECRUITMENT AND TURNOVER

I**n March 2019, PRISMA recruited a new expatriate Head of Portfolio (HoP)**. There were some delays in the visa and formalities process, which resulted in a delayed start date late July 2019.

In Operations (administration, finance, procurement and IT), seven staff joined the program this semester to replace leavers. Two new MIS staff members were also recruited to replace staff who left during Phase 1. The program recruited a new Provincial Administrative Officer for the new Central Java office, and a Strategic Communications Officer to provide liaison services and support to BAPPENAS in Jakarta.

In terms of implementation staff, the recruitment for a further cohort of staff (Cohort 6) was completed successfully during the reporting period. From a total of 1,400 applicants, 28 candidates were selected: three Senior Business Consultants, 18 Business Consultants and seven RML Business Consultants. Their five-week induction program commenced on 1 July 2019.

Three implementation staff resigned during this semester; two, including the Head of GSI, are moving overseas for family reasons, while the other, a Principle Business Consultant has resigned for health reasons. It is anticipated that replacements will be promoted internally within the program, and more implementation staff may be recruited during the next reporting period via an additional cohort.

The number of resignations and discontinuations going in to Phase 2 from a total of 142 staff is outlined in Table 3. The program responded by pushing through the hiring and formal training of Cohort 6, comprising 28 staff.

TABLE 3: STAFF RESIGNATIONS AND DISCONTINUANCE TO PHASE 2

Resignations		Discontinued due to poor performance		Discontinued due to duplication of role		Discontinued due to no cross-functionality	
Unit	**Number**	**Unit**	**Number**	**Unit**	**Number**	**Unit**	**Number**
Implementations	12	TIRTA	1	TIRTA	2	TIRTA	6
Operations	3	Operations	3				

RML	2	MIS	1				
MIS	1	GSI	1				
IT	1						
SAFIRA	3						
TIRTA	1						
Total	23	Total	6	Total	2	Total	6

From a total of 98 staff that were offered contracts for Phase 2, 88 staff accepted the contract (refer to Table 4)

TABLE 4. STAFF CONTINUANCE

Timing	Total Continued	Implemen-tation	RML	Operations & Finance	MIS	IT	Comms	SAFIRA	TIRTA	ARISA
Dec-18	98	51	13	18	3	1	4	2	4	2
Feb-19	88	46	10	16	3	1	4	2	4	2

TALENT MANAGEMENT

During this reporting period, PRISMA reviewed and updated its Talent Management system; this will be trialled at the beginning of the next reporting period. Talent management includes:

1. the **HR functions** of recruiting the right people and creating an encouraging and goal-focused environment to enable staff to realise their potential, and
2. a **capacity building function**, which enables staff to build their skills and knowledge in a structured and focused manner, and looks at effective succession planning.

The staff incentive program has been built into the talent management protocols and allows for performance-based bonuses at both team and individual levels.

6.2 Operations

During this semester, all the PRISMA policies and procedures related to procurement and administration were reviewed and updated with the aim of streamlining procedures and improving efficiencies. The teams' (operations, procurement, finance, IT and HR) business processes were reviewed in the first quarter and changes made to the allocation of responsibilities and tasks. This was undertaken to ensure better workflows and prevent unnecessary overlap and duplication of functions across teams. This has worked well and will continue to be reviewed periodically.

The program was deemed low risk when Palladium Head Office carried out an internal operational risk assessment to determine if internal procedures needed strengthening. All necessary procedures are in place and working effectively.

The procurement team undertook 127 requests for tender and established 20 panel tenders. Panel tenders are for regular services, such as translating, printing, event organisers and enumerators. The following agreements have been signed with private sector partners for interventions: 8 Partnership Agreements (PAs), 1 MoU and 1 grant. PRISMA's goal was to increase the number of PAs, as these have proven to be less labour intensive and demonstrate a higher level of commitment from the partners.

The IT Team has completed the upgrade of the server to improve connectivity and storage capacity.

Annex 1 – Subsector Profiles

1. BEEF

Beef Sector Summary

Beef industry is important globally, with world production and consumption steadily increasing over time. From 2014-2018, world beef consumption increased by 0.94% annually and strong global demand is expected to continue, driven by demand from the US and Chinese market. Indonesia, as the largest beef producer in Southeast Asia, experiences a shortfall in production as domestic consumption outstrips supply; hence national demand is fulfilled by imports. The majority of beef cattle farmers in Indonesia are suffering from low productivity and low production caused by poor quality input and inferior rearing management. In general, farmers rear the cattle for 11-12 months whereas good quality input and proper rearing management can shorten the period to 3-6 months. With shorter rearing period, farmers can rear more cattle in a year, resulting in higher income.

Quick facts:

Total production	Total population	Consumption	Demand
486,320 ton	16,429,102 head	0.445 kg/capita	6.37%

Facts Source: Statistik Pertanian 2018

East Java

- Total Provincial Population : 4,511,613
- Total Provincial Production : 96,917
- Total farm households in the sector : 1,908,037

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	10,908
Cumulative Outreach Projected to Dec 2023 (HHs)	38,471
Total NAIC up to Y19S1 (IDR)	166,960,804,192
Total NAIC to Y19S1 (%)	134.69%
Total projected NAIC to Dec 2023 (IDR)	975,998,491,719

Central Java

- Total Provincial Population : 1,710,769
- Total Provincial Production : 59,903
- Total farm households in the sector : 817,623

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	43,530
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	926,397,711,898

NTT

- Total Provincial Population : 1,007,608
- Total Provincial Production : 12,285
- Total farm households in the sector : 207,539

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	65
Cumulative Outreach Projected to Dec 2023 (HHs)	2,165
Total NAIC up to Y19S1 (IDR)	212,240,015
Total NAIC to Y19S1 (%)	144.76%
Total projected NAIC to Dec 2023 (IDR)	212,240,015

NTB

- Total Provincial Population : 1,149,539
- Total Provincial Production : 9,472
- Total farm households in the sector : 192,000

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	645
Cumulative Outreach Projected to Dec 2023 (HHs)	13,228
Total NAIC up to Y19S1 (IDR)	4,678,089,946
Total NAIC to Y19S1 (%)	99.37%
Total projected NAIC to Dec 2023 (IDR)	45,478,666,817

Beef OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	11,618
Cumulative Outreach Projected to Dec 2023 (HHs)	97,394
Total NAIC up to Y19S1 (IDR)	171,851,134,153
Total NAIC to Y19S1 (%)	132.77%
Total projected NAIC to Dec 2023	1,948,087,110,449

Value For Money (VFM)	Beef Overall
Investment Leverage Partner	0.12
Investment Leverage Sector	0.40
Investment Per HH:	AUD 348.30
Social Return:	4.36

1.1 Beef Central Java

Central Java accounts for 10.4% of Indonesia's cattle population and contributes to 12.3% of total national beef production. The growing national demand for beef, and the government target of self-sufficiency for country in beef by 2025, drives the growth of the cattle and beef sector in this province which, despite being one of the large contributors of beef nationally, suffers from suboptimal production. Most farmers in Central Java do not see cattle rearing as a business or means of livelihood, and are therefore usually reluctant to make the investment needed to tap into the opportunity provided by Indonesia's beef cattle deficit. Moreover, farmers lack of awareness of and access to better cattle feed options and know-how on good rearing practices, resulting in the low productivity of cattle; this is also contributed to by inferior feeder cattle quality resulting from poor genetics, and the poor nutrition of female breeder cattle.

Challenges and constraints

Farmers in Central Java are unable to increase their beef production and productivity due to the following key reasons:

- **Low productivity.** Slow weight gain in calves and cattle results from lack of farmer awareness of and access to quality and sufficient quantity of improved feed and proper feeding practices, which are primary necessities for accelerated weight gain in cattle.
- **Poor nutrition of female breeder cattle** contributes to the low success rate of both artificial insemination (AI) and natural mating, and to the inferior quality of feeder cattle.
- **Adoption of traditional medicine practices** for cattle treatment is prevalent among most cattle farmers. These are inefficient and largely ineffective, increasing costs and compromising productivity.
- **Low conception rate of AI** due to the suboptimal health of female cattle, lack of knowledge of farmers compromising their ability to detect the cattle's oestrous cycle, and inefficiencies in AI service provision.

Intervention areas

To address these challenges and constraints, PRISMA works with partners to:

- promote cattle-specific concentrate feed and better feeding practices to cattle farmers in Central Java, and
- facilitate feed producer KJUB Puspetasari to invest in (1) product development and promotion to increase its sales through various marketing channels, and (2) training and motivating its agents to increase their capacity and motivation to promote concentrate feed to farmers.

Subsector vision for systemic change

By 2023, the beef sector in Central Java expects to benefit 43,530 farmers directly by producing more and better quality cattle/beef due to the higher adoption of good farm level cattle management practices, which will be driven by a growing demand and change in consumer preference for quality beef. Feed companies will provide more concentrate feed options, forage suppliers will produce better quality forage, and both will provide up-to-date knowledge on good feeding practices to farmers in Central Java. Animal pharmaceutical companies will start seeing the beef livestock market as a viable source of business, resulting in their investing more in promoting their products and equipping farmers with better animal health management knowledge. At the off-farm level, meat distributors will adopt grading practices for local beef to cater to a higher value market.

1.2 Beef East Java

East Java is Indonesia's biggest cattle producing province, accounting for 20% of national beef production and 27.4% of the national beef cattle population. Development of the beef sector is driven by inter-regional cattle exports and local consumption of beef. Despite being the country's largest cattle and beef production province, the overall East Java cattle production system is still relatively unproductive. Most farmers here raise cattle as a family asset and a source of ready cash in times of need, rather than seeing cattle rearing as a business or livelihood, or making a conscious decision to attempt to benefit from Indonesia's beef cattle deficit. This approach to raising cattle, coupled with a lack of supplementary feedstock, poor know-how regarding feeding

practices, and limited awareness of the commercial benefit of using improved feed, together result in the low productivity of East Java's cattle.

Challenges and constraints

Farmers are unable to increase their beef production and productivity due to the following main challenges and constraints:

- **Slow weight gain** in calves and cattle, caused by lack of farmer awareness of and access to quality and sufficient quantity of improved feed or proper feeding practices, which are primary necessities for accelerated weight gain in cattle.
- **Poor nutrition of female breeder cattle** resulting in the low success rate of both AI and natural mating, and inferior quality of feeder cattle.
- **Low conception rate from AI** due to the suboptimal health of female cattle, lack of knowledge of farmers compromising their ability to detect the cattle's oestrous period, and inefficiencies in AI service provision.

Intervention areas

To address these challenges and constraints, PRISMA is collaborating with partners to:

- promote cattle-specific concentrate feed and better feeding practices to cattle farmers in East Java.
- support feed producer KJUB Puspetasari, to invest in (1) product development and promotion to increase its sales through various marketing channels, and (2) training and motivating its agents to increase their capacity and motivation to promote concentrate feed to farmers.

Progress and achievement up to December 2018

During the first phase of program implantation, PRISMA partnered with four feed companies and facilitated them to promote good rearing practices, along with supplementary and concentrate feeds to farmers. These partner companies have experienced a significant (at least 83%) increase in sales due to improvements in their marketing strategy and distribution expansion to nearby districts. For example, PT Japfa Comfeed Indonesia has penetrated the eastern part of the East Java market by expanding its distribution channels to Jember, Bondowoso and Madura Island. Another partner company, KJUB Puspetasari, invested in three additional marketing staff to enter new districts in East Java, and has doubled the capacity of its feed processing machine to meet the growing demand for concentrated feed. PRISMA also facilitated KJUB Puspetasari to partner with local government to promote concentrate feed through various events, such as Cattle Contest and Cattle Harvest Day. By December 2018, 10,110 farmers in East Java had experienced an average 169% increase in income due to PRISMA's beef interventions in the province.

Subsector vision for systemic change

By 2023, the beef sector in East Java is expected to benefit 27,563 farmers directly by producing more and better quality cattle/beef due to the higher adoption of good farm level cattle management practices, which is driven by a growing demand and change in consumer preference for quality beef. Feed companies will provide more concentrate feed options, forage suppliers will produce better quality forage, and both will provide knowledge on good, up-to-date feeding practices to farmers in East Java. Animal pharmaceutical companies will start seeing the beef livestock market as viable business, and as a result invest more in promoting their products and equipping farmers with better animal health management knowledge. At the off-farm level, meat distributors will adopt grading practices for local beef to cater to a higher value market.

1.3 Beef NTB

The Indonesian province of Nusa Tenggara Barat (NTB) has the fourth largest cattle population, is thirteenth largest for beef production, and ninth largest for inter-provincial cattle trade. Local consumption of beef and the inter-regional live cattle trade are the main drivers of its cattle sector development. Cattle play an important role in the provincial economy with 208,500 households involved in the sector, which is strongly supported by

both national and local governments. However, the cattle and beef still suffer from suboptimal productivity, mainly due to poor knowledge among cattle farmers of good animal rearing practices.

Challenges and constraints

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

- **Limited availability of good quality calves**, particularly among ranch beef cattle in Sumbawa Island. This is largely a result of poor inbreeding due to the limited knowledge of farmers of animal breeding management. Even in the enclosed system prevalent in Sumbawa Island, calf production has not been optimal because the farmers have inadequate knowledge of proper AI timing and limited access to effective and quality AI services.
- **Poor nutritional intake of the cattle**. Lack of good quality fodder and lack of water resources affect cow feed intake, especially during the dry season. There is low use of supplementary feed as farmers are unaware of its commercial benefits.

Intervention areas

To address these challenges and constraints, PRISMA collaborates with the private sector to:

- promote commercially available, appropriate and affordable feed and animal pharmaceuticals for cattle fattening, to boost weight gain of the cattle.

Progress and achievement up to December 2018

During the first phase of programme implementation, PRISMA collaborated with feed companies to promote commercially available, appropriate and affordable feed and animal pharmaceutical products for cattle fattening, and to disseminate accurate, up-to-date information on good rearing practices (GRP). The principal agent has expanded its business by partnering with four sub-agents (retailers) in three districts in Lombok to cater to the untapped smallholder households in remote areas. In addition, the agent continues to conduct market storm activities to promote their products.

Subsector vision for systemic change

By 2023, the beef sector in NTB expects to benefit 11,875 smallholder households by producing more and better quality cattle due to the higher adoption of good, farm level cattle management practices of balanced feed efficiency, health management and breeding practices. Cattle feed producers will expand their business by establishing distribution networks and conducting effective market promotions across the province. Animal pharmaceutical companies will increase their market share through penetrating the untapped market, by expanding and developing the capacity of their distribution network, and conducting marketing which targets vets and farmers.

2. COCONUT

Coconut Sector Summary

Indonesia is the largest coconut producer in the world, accounting for 30% of global share (2016). While coconut has many derivative products, demand fo coconut sugar in both international market and local market is increasing at a high rate. Philippines, Indonesia and Thailand account for 80% of global coconut sugar production; but 90% of coconut sugar in Indonesia is consumed locally. Market value of coconut sugar production in Indonesia is USD 2 billion and growing; estimated coconut sugar production in 2016 was 300,000 MT, while local demand was around 350,000 MT. North and central Sulawesi, North Maluku, East Jav Central Java and West Java are among the largest coconut sugar producing regions in Indonesia. Major reasons for low coconut sugar productivity in Indonesia especially in Central and East Java, are due to low productivity of ageing trees, low rejuvenation rate of old trees and poor post-production practices at farme level. Opportunities exist to partner with crystal sugar exporters and block sugar producers who are trying to expand their business and engage with more farmers for sugar collection.

Quick facts:

Total production
2,870,739 Ton

Total harvested area
3,653,167 Ha

Productivity
1,100 kg/Ha

Facts Source: Statistik Pertanian 2018

East Java

- Total Provincial Production (Ton) : 260,906
- Total provincial harvested area (Ha) : 286,278

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	431
Cumulative Outreach Projected to Dec 2023 (HHs)	431
Total NAIC up to Y19S1 (IDR)	302,292,000
Total NAIC to Y19S1 (%)	10.26%
Total projected NAIC to Dec 2023 (IDR)	302,292,000

Central Java

- Total Provincial Production (Ton) : 165,808
- Total provincial harvested area (Ha) : 225,671

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	6,660
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	-
Total projected NAIC to Dec 2023 (IDR)	8,251,740,000

NTT

- Total Provincial Production (Ton) : 69,308
- Total provincial harvested area (Ha) : 141,566

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	91
Cumulative Outreach Projected to Dec 2023 (HHs)	91
Total NAIC up to Y19S1 (IDR)	121,169,922
Total NAIC to Y19S1 (%)	55.87%
Total projected NAIC to Dec 2023 (IDR)	121,169,922

Coconut OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	522
Cumulative Outreach Projected to Dec 2023	7,182
Total NAIC up to Y19S1 (IDR)	423,461,922
Total NAIC to Y19S1 (%)	18.21%
Total projected NAIC to Dec 2023	8,675,201,922

Value For Money (VFM)	Coconut Overall
Investment Leverage Partner	0.46
Investment Leverage Sector	0.00
Investment Per HH:	AUD 3,722.88
Social Return:	0.02

2.1 Coconut Central Java

Central Java province is the sixth largest producer of coconut in Indonesia, accounting for around 6% of national production. Coconut is one of the province's primary cash crops and engages around 1.1 M farmers in the province. However, growth in production is declining, at 2.73% per year (2013-17). In 2016, productivity was 0.81 MT per ha, slightly lower than the national average (0.82 MT per ha) and significantly lower than a few provinces outside Java including Sumatera Utara and Sulawesi Utara (1.02 MTs per ha), and countries such as the Philippines (2 MTs per ha). In Central Java, the five districts of Banjarnegara, Purbalingga, Banyumas, Cilacap and Kebumen (which together form Barlingmascakeb) cover 60% of the total coconut production area. Limited information and technology on application of GAP and, limited rejuvenation of and access to high quality dwarf seedling are among the main reasons for low income of the coconut sugar farmers

Challenges and constraints

Farmers struggle to increase their income from coconut for four main reasons:

- **Low productivity of old trees and limited rejuvenation activities**. As many as 72% of coconut trees in Indonesia are old or unproductive. Farmers usually do not replant unproductive trees due to low understanding of the cost/benefit of doing so, and the availability and high quality of dwarf varieties.
- **Farmers have difficulty in harvesting coconut sap**, which is time-consuming, especially without the proper tools and equipment. It is particularly difficult for the current tree climbers, whose average age is 45 years. Farmers do not use either climber services (which reduce their revenue by up to 30%) or climbing tools and equipment provided by government (which are perceived to be less practical and time-consuming to use).
- **Farmers do not know how to produce better quality sugar**. During post-harvest processing, most coconut sugar farmers use more than the permitted amount of chemical preservatives, which leads to a low selling price. Farmers also have limited information on how to make a higher value product (such as crystal sugar) which could potentially increase their income by 30%.
- **Limited adoption of efficient processing technology and GPP**. Farmers still use suboptimal processing practices, tools and equipment which incur high energy costs and increase the time needed to produce coconut sugar. At the same time, they are unaware of the benefits and costs of good processing practices for sugar production.

Intervention area

PRISMA is exploring with market actors opportunities in the promotion of (1) rejuvenation of old trees with high quality dwarf varieties, and (2) GAP, which include block sugar producers such as Unilever and crystal sugar exporters.

Subsector vision for systemic change

In the second phase of program implementation, PRISMA aims to achieve systemic change in the coconut sector in Central Java by improving the capacity and service provision of key market actors. Interventions will facilitate nurseries, the Balit Palma research centre, exporters and processing companies to reach farmers in Central Java with high quality dwarf seedlings and assist farmers by providing information on GAP and GPP. By 2023, the sector will be producing more coconut sugar due to improved access to high quality dwarf seedlings, and increased use of better technology, cultivation and processing practices.

3. COFFEE

Coffee Sector Summary

Indonesia's coffee production is declining amidst growing global and local consumption. Indonesia contributed to around 7% of the global coffee production (December 2017/2018), of which 12% constitutes of Arabica and the remaining 88% is Robusta. At the global level, Indonesia ranks 4th in global coffee production behind Brazil, Vietnam, and Colombia. However, according to USDA, Indonesia's coffee production declined by 1.7% (2013-2017) and has led to a 4.4% decline in Indonesia's coffee export in the same years. Given the situation, it is projected that coffee will experience a demand – supply gap where global coffee production cannot fulfill the growing demand in the global market. On the national level, the demand for coffee in the domestic consumption has been also increasing. Based on previous trend on production, Indonesia's coffee consumption is projected to surpass its production by 2035, meaning that improving Indonesia's coffee productivity will be a necessity, not only to strengthen Indonesia's position in the coffee global market but also to improve farmers livelihood through higher coffee yields that are currently still far below its potential.

Quick facts:

Total production	Total harvested area	Productivity	Demand
663,871 Ton	1,246,657	714 Kg/Ha	Export: 3.8% CAGR Domestic: 6.15% CAGR

Statistik Pertanian 2018, Indonesia's Tree Crop Estate Statistic 2014-2017

NTT

- Total Provincial Production (Ton) : 22,335
- Total provincial harvested area (Ha) : 66,572
- Total farm households in the sector : 110,858

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	9,936
Cumulative Outreach Projected to Dec 2023 (HHs)	9,936
Total NAIC up to Y19S1 (IDR)	17,303,031,264
Total NAIC to Y19S1 (%)	30.17%
Total projected NAIC to Dec 2023 (IDR)	17,303,031,264

Coffee OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	9,936
Cumulative Outreach Projected to Dec 2023	9,936
Total NAIC up to Y19S1 (IDR)	17,303,031,264
Total NAIC to Y19S1 (%)	30.17%
Total projected NAIC to Dec 2023	17,303,031,264

Value For Money (VFM)	Coffee Overall
Investment Leverage Partner	0.19
Investment Leverage Sector	0.07
Investment Per HH:	AUD 194.56
Social Return:	0.90

3.1 Coffee NTT

Nusa Tenggara Timur (NTT) ranks as the tenth highest coffee producing province in Indonesia, accounting for 6% of national production in 2015. According to the Tree Crop Estate Statistics of Indonesia (2017), NTT produced around 21,000 MTs of coffee, 65% of which was the Robusta variety and 35% Arabica. It constitutes a harvested area of 40,000 ha over 19 producing districts; the top five districts with the highest harvested area are Manggarai Timur (12,952 ha), Ende (5,145 ha), Manggarai (4,421 ha), Manggarai Barat (4,291 ha) and Ngada (4,291 ha). However, Manggarai Timur, Ende, and Ngada combined were the only districts that produce both coffee varieties in substantial amounts, accounting for more than 1,000 MTs each of Robusta and Arabica (2015).

Challenges and constraints

Coffee farmers in NTT are experiencing low income from coffee due to the following reasons:

- **Processors' limited access to financial services**. Many of the coffee processors have low financial capacity, impeding their ability to diversify their products into mass and speciality coffee markets. They

usually receive capital from local coffee traders who set the price in advance to secure a coffee supply for export.

- **Absence of an aggregating function for specialty coffee**. Most specialty coffee buyers (roasters and coffee shops) are located outside of NTT (mostly in the big cities in Java) and require a relatively small supply (approximately 300 kg each month per roaster/coffee shop). This increases the shipping and logistic costs for both processors and roasters.
- **Limited market information**. Distribution of information about the growing demand of specialty coffee is hampered by the low networking capacity of processors, who are mostly SME owners with low levels of educational attainment and limited options regarding information distribution channels in the area.
- **Limited GPP assistance specifically for specialty coffee**. Despite the many NGOs and government programs in the region, changes to the practices of farmers and processors are minimal. This is mainly due to the low conversion of coffee quality into the price received by farmers. Processors have no incentive to provide GPP assistance to farmers because existing coffee buyers also do not require adherence to any quality standard (other than maximum defect percentage and moisture content).
- **Low productivity of old trees and limited rejuvenation activities**. Many coffee farmers have ageing and relatively less productive coffee trees which require rejuvenation, replanting and GAP application to boost their productivity. However, they are reluctant to carry out these activities, as this would result in the reduction of their source of income for three to four years. This is mainly due to farmers' low understanding of high quality inputs and GAP caused by limited market actors actively promoting the knowledge.

Intervention areas

To address these challenges and constraints, PRISMA works with partners to:

- promote high quality seed to increase coffee productivity, and
- promote good processing practices to increase the quality consistency of NTT's coffee.

Progress and achievement up to December 2018

In its first phase, PRISMA partnered with three Arabica coffee processors in Manggarai district (UD Karunia, Karolus and Kornelis) and facilitated their linkage with financial institutions (Bank NTT and Bank BRI) and an Arabica coffee exporter (PT Indokom). Decentralising coffee processing units and increasing the financial capacity of local traders have led to higher competition among coffee buyers in the market, resulting in higher prices at both the farmer and the processor level. Around 530 MTs of coffee were traded at a higher price in 2018 alone, benefiting 7,120 farmers from cumulative income increase. Since early 2019, Bank NTT and Bank BRI have been providing financial products to other processors (Karolus and Marten). However, this price change did not result from improvement to coffee quality but because of higher competition among coffee buyers. More work is therefore needed from PRISMA to ensure that change is systemic and sustainable.

Subsector vision for systemic change

Learning from the experience of the last phase, PRISMA Phase 2 will focus on providing strategic advisory services for high quality seed producers to facilitate the expansion of their business by introducing coffee varieties with a faster growing period and shorter trees for ease of maintenance (including pruning and post-harvest maintenance). PRISMA also plans to introduce farmers to a new plantation system designed to optimise their limited land through planting distance management (resulting in 2,000 trees per ha compared to 1,300 trees per ha). To achieve this, PRISMA will also work on the development of nurseries to increase the number of market actors promoting high quality seed and GAP. At the end of the program, we envision seed nurseries will be operating profitably in the market, with a better product promotion strategy. They will be well-informed about the commercial opportunity that the seed market presents and well-connected to the existing network established by the previous intervention.

4. CROP PROTECTION

Crop Protection Sector Summary

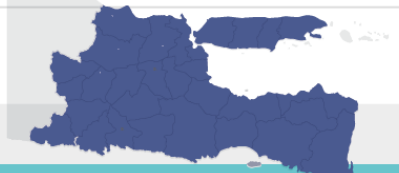
Farmers across Indonesia rely heavily on chemical control for its perceived effectiveness and efficiency. Chemical pesticide market was estimated at USD 576.9 million in 2018 and is expected to grow at a CAGR 5.4% in terms of value. Main drivers for demand growth of this market are growing population, government's self-sufficient initiative and expansion of arable land. Farmers have widely practice crop protection but many of them still experience yield loss due to pest attack. Farmers select pesticide depends on their perceived potency (regardless of pest resistance implication), improperly mix and overdose that cause pest resistance, health and environment issues. Farmers face major problem on limited access to pest and disease management (GPP) knowledge. Smallholder farmers in rural areas commonly rely on narrow information circle from peers, relatives and small kiosks to gain the knowledge. Dissemination of GPP knowledge is generally limited due to the lack of extension services from public and private.

Quick facts:

Total market value of chemical pesticide
4.4 million

Total market value of chemical pesticides
USD 576.9 million in 2018

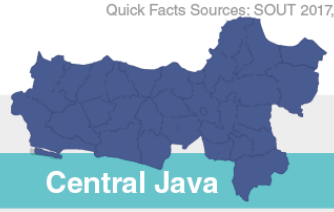
Quick Facts Sources: SOUT 2017, Grandview 2019



East Java

- Total potential farmers (rice & maize) : 2.4 million farmers
- Total market value of chemical pesticides : USD 126.7 million (2018)

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	32,192
Cumulative Outreach Projected to Dec 2023 (HHs)	114,822
Total NAIC up to Y19S1 (IDR)	262,723,947,064
Total NAIC to Y19S1 (%)	81.71%
Total projected NAIC to Dec 2023 (IDR)	702,925,889,601



Central Java

- Total potential farmers (rice & maize) : 1.9 million farmers
- Total market value of chemical pesticides : USD 194.7 million (2018)

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	7,562
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	38,794,727,518

NTT

- Total potential farmers (rice & maize) : 173k farmers
- Total market value of chemical pesticides : USD 25.8 million (2018)

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	4,571
Cumulative Outreach Projected to Dec 2023 (HHs)	9,659
Total NAIC up to Y19S1 (IDR)	30,061,971,384
Total NAIC to Y19S1 (%)	61.63%
Total projected NAIC to Dec 2023 (IDR)	51,033,580,029

NTB

- Total potential farmers (rice & maize) : 300k farmers
- Total market value of chemical pesticides : USD 8.5 million (2018)

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	9,821
Cumulative Outreach Projected to Dec 2023 (HHs)	20,400
Total NAIC up to Y19S1 (IDR)	99,582,826,334
Total NAIC to Y19S1 (%)	51.23%
Total projected NAIC to Dec 2023 (IDR)	133,200,546,286

Crop Protection OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	46,584
Cumulative Outreach Projected to Dec 2023	152,443
Total NAIC up to Y19S1 (IDR)	-392,368,744,781
Total NAIC to Y19S1 (%)	73.15%
Total projected NAIC to Dec 2023	925,954,743,434

Value For Money (VFM)	Crop Protection Overall
Investment Leverage Partner	0.35
Investment Leverage Sector	4.52
Investment Per HH:	AUD 36.32
Social Return:	23.19

Crop protection involves any effort to prevent losses in plant cultivation caused by pest and disease which can damage, disturb or cause the death of the plant. In 2018, the Indonesian crop protection chemical market was estimated at USD 846.7 M, with an expected compound annual growth rate (CAGR) of 5.6%.

The GOI is leaning towards promoting the IPDM approach, which balances the use of all pest and disease control methods, and suggests the use of chemical control as a last resort or only in emergencies. However, farmers across Indonesia rely heavily on chemical control for crop protection, due to its being perceived as the most efficient and available practice. Farmers suffer from their injudicial use of pesticide, threats of new pest and disease, and the sharing of unstandardised information, all of which can cause production loss.

In Indonesia, around seven registered multinational pesticide companies dominate 70% of the market; the remaining 30% is shared between 2,900 local pesticide companies. In the six provinces where PRISMA works, there are 19,867 retailers and distributors providing pesticide input products for farmers.

Challenges and constraints

The main underlying causes of pest and disease are:

- **Farmers have limited access to reliable and timely good pesticide practice knowledge.** Farmers usually possess a narrow information circle, obtained from their parents and peers. Risk of crop failure and a high reliance on chemical pesticides also comprise good pesticide practice adoption. Education provided to farmers on good pesticide practice knowledge by public extension workers tends to be rare due to internal lack of capacity and large coverage areas. At the same time, private extension services provided by small-scale companies tend to focus on sales.
- **Farmers have limited access to alternative crop protection methods.** New and intense procedures for registration and licence renewal present a barrier to market players wanting to release and distribute their products, and some high demand products have been withdrawn from the market due to the change in registration policy. Biopesticide producers face the additional challenge of being required to ramp up production and distribution to comply with this new regulation.
- **Farmers have limited access to information on attack from new pest and disease**. The number of market actors providing information is limited, partly due to the government agency on pest forecasting having a limited number of workers available to disseminate up-to-date information. At the same time, public and private extension workers themselves have limited access to the latest information on the spread of new pest and disease.

Intervention areas

To address these challenges and constraints, PRISMA works with partners to:

- promote quality pesticides and their judicious use, and
- promote alternative crop protection methods.

Progress and achievement up to December 2018

In the program's first phase of implementation, in its vegetable, Shallot and rice sectors PRISMA has partnered with several private sector chemical and bio-based pesticide companies (PT Agricon, CropLife Indonesia, PT Nufarm, NASA, PT Danken, and PT FMC) to promote quality pesticide and good processing practice knowledge to farmers. By December 2018, PRISMA's collaboration with these partners had increased the income of 47,434 farmers in EJ, NTB and NTT by an average of 66.41%.

Subsector vision for systemic change

In Phase 2, PRISMA is continuing its previous collaboration with pesticide companies in the vegetable and shallot sectors. Under this new cross-cutting sector, the scope of work will be broadened to target beneficiaries in all Phase 2 commodities, and will not solely cover pesticide but also wider crop protection management and practices. Its overall vision is to increase the income of 102,340 rice, maize and horticulture smallholder farming households by 2023, through increasing the judicious use of pesticide and diversifying crop protection

methods, resulting in increased yields, reduced costs, and the reduced adverse impact on environmental and health.

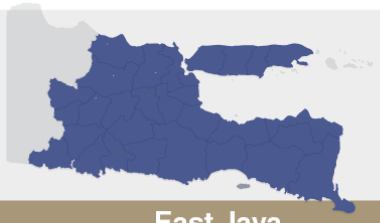
5. DAIRY

Dairy Sector Summary

Annual demand of milk at the national level is 4.4 mill ton. Local milk production is only 0.93 mill ton (21% of demand) and the rest (3.5 mill ton or 79% of demand) is fulfilled via import in form of skim milk powder, anhydrous milk fat, and butter milk powder from several countries. During the period of 2016-17, local demand for milk has increased at around 4% while local production increased at only 3%. Three provinces in Indonesia - East Java, West Java and Central Java supply around 95% of local milk production. Both on farm and off farm factors contribute to low productivity and quality of dairy milk in Indonesia; some of these factors include traditional feeding practice, poor on-farm animal health management, long calving interval and poor post-harvest management. Presence of large market actors including milk processing companies like Nestle, Indolacto, Frisian Flag; animal pharmaceutical companies like Medion; and dairy farmer cooperatives provide significant opportunities for collaboration and contribute to the development of dairy sector.

Quick facts:

Total National Population	Milk Production	Milk Productivity (L/day)	Demand (% increase or decrease)
540,441	928,108 ton	11 L/day	4.1 %



East Java

- Total Provincial Population : 273,881
- Milk Production (Ton) : 498.916
- Total farm households in the sector (HHs) : 64,504

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	5,460
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	14,332,500,000

Central Java

- Total Provincial Population : 138.560
- Milk Production (Ton) : 99.607
- Total farm households in the sector (HHs) : 30,922

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	3,276
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	6,770,443,680

Dairy OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	-
Cumulative Outreach Projected to Dec 2023	8,736
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023	21,102,943,680

Value For Money (VFM)	Dairy Overall
Investment Leverage Partner	-
Investment Leverage Sector	-
Investment Per HH:	-
Social Return:	-

5.1 Dairy Central Java and East Java

Central Java province has the second largest population of dairy cattle in Indonesia with 138,500 head of dairy cattle, but is only the country's third largest milk producer (99,600 MTs per year). This is primarily due to two factors: (1) low productivity of milk, and (2) there are generally fewer lactating cows than other classes of cattle. In Central Java, the male and young cow populations are larger than those lactating (cattle here comprise 18% male/young cow and 10% lactating cows). Dairy cattle productivity in Central Java is around 9.4 litres per day, significantly lower than in West Java (13.5 litres/day) and East Java (10.3 litres/day); most dairy farming households here are located in Boyolali, Semarang, Salatiga and Klaten districts.

East Java province is the largest dairy milk producer in Indonesia, accounting for around 50% (273,890 head) of the country's dairy cattle and 53% (498,900 MTs of milk per year) of its national milk production. However, growth in East Java's milk production is slower than the increase in its dairy cattle population: the CAGR for milk production is 4.62% and for dairy cattle population is 5.28% (2013-17). Dairy cattle productivity in East Java is around 10.3 litres per day, higher than Central Java but lower than West Java (13.5 litres/day). Dairy farming is centralised in selected districts in East Java, such as Malang, Pasuruan, Probolinggo, Kediri and Tulungagung. These are mainly located on high land and account for 85% of the total cattle population in this province.

Challenges and constraints

Both on-farm and off-farm factors contribute to the low productivity of dairy milk in East Java and Central Java:

On-farm factors contributing to low productivity

- **Low milk production due to traditional feeding practices**. Most dairy farmers rear their cattle following traditional methods using makeshift feed. Some do use concentrate feed, but this is of insufficient quality and quantity to meet the needs of the cows. Forage feed is also of poor quality, resulting in fewer nutrients for the cows and less milk production.
- **Long calving intervals**. Low nutrient intake also affects cattle fertility, which in turn lengthens calving intervals.
- **Genetic breeding of cattle** over several generations and improper inbreeding result in low cow immunity. This causes the emergence of disease and adversely affects milk production.
- **Inefficient economic scale**. Average cow ownership is just three cattle head per household, insufficient to provide a main income. This disincentivises farmers from investing in improved on-farm practices.
- **Poor health and breeding management**. Farmers rely heavily on veterinarians to maintain health and carry out AI services. However, there is no system in place to monitor the growing stages of dairy cows in order to apply AI and other services at the appropriate time.

Off-farm factors contributing to low productivity

- **Poor post-harvest handling of milk** results in substandard quality. Milk is highly susceptible to bacteria and temperature; however, the frequent lack of standardised post-harvest handling practices by dairy farmers and cooperatives, essential to maintaining milk quality, means it often does not meet the requirements of the milk processing companies.

Intervention Areas

To address these challenges and constraints, PRISMA works with partners to:

- Promote good quality feed
- Promote Animal Health Management
- Utilize digitalization recording for better management and shortening calving interval
- Water provision for better sanitation and water drinking
- Improve access farm equipment for increase quality of milk

Subsector vision for systemic change

In its second phase of program implementation, PRISMA aims to achieve a greater systemic change in the dairy sector in Central Java and East Java provinces by strengthening relationships between market actors. Initially, it will focus on addressing the on-farm constraints of feed quality and availability, animal health management, and dairy farmers' access to affordable financial products, in order to increase the number of cattle per household. Input companies (feed and animal health) and forage traders will provide increased options of concentrate feed, forage and animal medicines to farmers. Off-takers (milk processing companies) will collaborate with these input companies to promote good dairy cattle management practices, and leverage dairy cooperatives to disseminate information on good post-harvest practices. By 2023, it is expected that the dairy sector in East Java and Central Java will produce more and better quality milk due to the higher adoption of good farming practices of balanced feed management, proper health management, improved breeding practices, availability and access to affordable financial products, and improved collaboration between cooperatives, input providers and milk processing companies, driven by high demand-local supply gap.

6. FINANCE

Finance Sector Summary

A World Bank study estimates that around 62% of the adult population worldwide have formal financial access where 27% of the total world population is farmers. This percentage of population who have formal financial access is even lower in Indonesia at 49%. Insufficient fund become the main reason for not having formal financial access for the population. In Indonesia, agriculture sector only contributed of 6.9% of bank credit portfolio where majority of this credit goes to agriculture companies or big value chain actors in agriculture and not to smallholder farmers. Unwillingness and scepticism around servicing the micro-segment of the MSME market, difficulty and cost associated with accessing historic credit data on smallholder farmers, unawareness of suitable financial products and services are some of the reason for low access to finance for farmers.

Quick facts:

Total Farming HH Population 27,682,117

Farming HH have Borrow: 60 % of total farming HH population

Farming HH Don`t Borrow: 40 % of total farming HH population

Potential Farming HH Want to Borrow but Don`t Borrowt: 32% of total farming HH population

Quick facts are processed from Survey Pertanian Antar Sensus 2019 and World Bank Study 2017

East Java

- Total Farming HH Population : 5,163,979
- Farming HH have Borrow : 3,098,387
- Farming HH Don`t Borrow at present : 2,065,592
- Potential Farming HH Able to Borrow with Affordable Loan : 2,571,662
- Potential Farming HH Want to Borrow but Don`t Borrow at Present : 1,652,473

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	2,752
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	7,292,800,000

Central Java

- Total Farming HH Population : 4,469,728
- Farming HH have Borrow : 2,681,837
- Farming HH Don`t Borrow at present : 1,787,891
- Potential Farming HH Able to Borrow with Affordable Loan : 2,225,925
- Potential Farming HH Want to Borrow but Don`t Borrow at Present : 1,430,313

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	12,329
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	32,671,850,000

NTB

- Total Farming HH Population : 666,375
- Farming HH have Borrow : 399,825
- Farming HH Don`t Borrow at present : 266,550
- Potential Farming HH Able to Borrow with Affordable Loan : 331,855
- Potential Farming HH Want to Borrow but Don`t Borrow at Present : 213,240

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	16,286
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	50,487,003,000

Finance OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	-
Cumulative Outreach Projected to Dec 2023	31,367
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023	90,451,653,000

Value For Money (VFM)	Finance Overall
Investment Leverage Partner	-
Investment Leverage Sector	-
Investment Per HH:	-
Social Return:	

6.1 Finance

A World Bank study (2017) estimates that only around 62% of the adult population worldwide has formal financial access. In Indonesia, this percentage is even lower, at 49%. Indonesia's agriculture sector contributes only 6.9% of the bank credit portfolio; the majority of this credit goes to agriculture companies or big value chain actors in agriculture, not to smallholder farming households. Unwillingness and scepticism around servicing the micro-segment of the MSME market, the difficulties and cost associated with accessing the historic credit data of smallholder farmers, and lack of awareness of suitable financial products and services are some of the reasons for the low access of Indonesia's farmers to farmers.

Challenges and constraints

The major challenges and constraints faced by the agricultural finance sector are:

- **On the supply side**, potential market actors do not see the commercial value of reaching out to farmers in rural areas due to high transaction costs and complicated logistics. They also perceive there to be a higher risk within the agricultural sector in these areas.
- **On the demand side,** current et actors have concluded that existing products are not right for them, necessitating intensive administrative processes and procedures, as well as requiring documentation that they often do not have, and wait times for processing that they cannot afford. They also tend to have minimal interaction with financial institutions, and as a result do not know how to access the products or services.

Intervention areas

To address these challenges and constraints, in its second phase PRISMA will work with partners in several areas (not limited to the following), to:

- bridge the formal and informal in financing. This includes using tools such as VCF and trader credit, credit scoring, disbursement through kiosks, and money transfers and remittances, and
- work with the supporting functions of consultancies to support this market segment.

Progress and achievement up to December 2018

In its first phase, the finance sector continued the work of SAFIRA, an AIP-Rural program which was operational from 2015-18 and focused on value chain finance. Achieving an income increase for 9,750 farming households against a target of 6,000 showed how appropriate finance offerings can serve as a viable means of increasing the incomes of smallholder farming households.

While SAFIRA was able to develop some commercial products with its partners, work remains to be done to strengthen the supply and appropriateness of finance to agriculture, including utilising technology and working with supporting functions to further facilitate this market.

Subsector vision for systemic change

In its second phase of program implementation, PRISMA aims to achieve a greater systemic change in the agricultural finance sector by improving the offering of a broad range of accessible and appropriate financial services. This will be done through facilitating the product development of financial institutions, fintechs and agribusinesses, using technological innovation to support disbursement, tracking and recovery at scale, better sourcing and service provision from consulting companies, improved promotion and marketing of products, as well as incorporation and linkages with and through input providers, kiosks, insurance providers and off-takers. The aim is to provide 50,000 smallholder farming households with access to a broad range of affordable and appropriate financial services.

7. INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

Information and Communication Technology Sector Summary

Information and Communication Technology (ICT) as a sector in the second phase of PRISMA can largely be thought of as a cross-cutting sector and therefore a delivery mechanism for other products and services be it information (including extension services, marketplace information, etc.) or finance and financial products. In contrary with the situation in urban area, ICT sectors in agriculture industry faces some major challenges such limited infrastructures, lack of technology knowledge of the farmers and poor understanding of agriculture of ICT players who are willing to tap in to the sector. Despite the fast grow of ICT in Indonesia, PRISMA's latest farmers information source survey (2015) in East Java, NTB, and NTT shows smartphone ownership and internet usage in farmers level are still low; at 15% and 5% respectively.

Quick facts:

Total Rural Area Covered by Signal Service
49.26%

Total Smartphone Ownership in Rural Area
50,33%

Internet Usage in Rural Area
41.99 %

Facts Source are processed data from Statistik Telekomunikasi Indonesia 2014 and 2017

East Java

- Total areas covered by signal (2014) : 52.54%
- Mobile phone ownership (2017) : 50.72%
- Internet user (2017) : 45.33%

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	20,475
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	40,776,687,900

NTT

- Total areas covered by signal (2014) : 44.22%
- Mobile phone ownership (2017) : 34.44%
- Internet user (2017) : 25.87%

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	5,415
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	16,786,500,000

ICT OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	-
Cumulative Outreach Projected to Dec 2023	25,890
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023	57,563,187,900

Value For Money (VFM)	ICT Overall
Investment Leverage Partner	-
Investment Leverage Sector	-
Investment Per HH:	-
Social Return:	-

7.1 ICT

In PRISMA's second phase, ICT will operate as a cross-cutting sector to provide a delivery mechanism for other products and services, such as information (including extension services, marketplace information), or finance and financial products. In contrast to the situation in urban areas, ICT sectors in the agriculture industry face major challenges, including limited infrastructure, farmers' lack of technology knowledge, and poor understanding of agriculture among ICT players who are willing to tap into the sector. Despite its rapid growth over time, PRISMA's most recent farmer information source survey (2015) in East Java, NTB and NTT shows smartphone ownership and internet usage at the farmer level to be low, at 15% and 5% respectively.

Challenges and constraints

The major challenges faced by the ICT services sector are:

- **Gradual uptake in technology adoption.** Due to its geographical remoteness, most rural areas have limited connectivity with only basic telecom infrastructure available, and technology adoption is rather slow in these areas. This remoteness, combined with farmer behaviour of 'seeing-then-believing', make technology adoption even more challenging.
- **Poor understanding at the ICT provider level of the agricultural sector**. Most agriculture start-ups have minimal business experience and little or no agriculture knowledge. In addition, most ICT actors are currently focusing on urban areas, as they perceive rural areas to have a higher barrier to entry.

Intervention areas

To address these challenges and constraints, PRISMA will work with partners in several areas (not limited to the following), to:

- support partners to develop ICT for loan administration;
- commercialisation of business models for finance and information through technology, and
- support value chain actors in accessing resources, including information and finance via technology.

Progress and achievement up to December 2018

During the first phase of program implementation, no ICT-focused intervention got off the ground. PRISMA conducted action research to determine the scale and scope of work in the sector, and during its the second phase, with a refocus on information and finance, will utilise this learning to identify potentially viable partners, gather new information about constraints, and develop additional opportunities to address those constraints.

Subsector vision for systemic change

In its second phase of program implementation, PRISMA aims to achieve a greater impact in agriculture through ICT utilisation by improving the access and availability of information and finance to the agricultural sector. This will be done through technology development for financial institutions and agri-input companies, as well as providing agricultural-relevant support to technology companies. We will also work to build up the depth, breath and supply of supporting functions tailored to agricultural ICT, including consulting, marketing and agent networks, as well as incorporation and linkages with and through input providers, kiosks, government, insurance providers and off-takers.

8. IRRIGATION

Irrigation Sector Summary

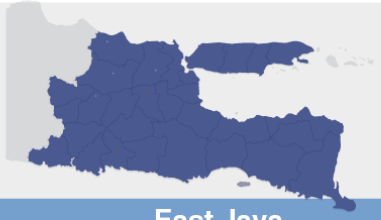
The use of irrigation in the agricultural sector, has been key to increasing the productivity of agricultural production around the world. However, the pace of expansion in irrigation schemes has slowed in recent years and there is growing interest in finding ways for the private sector to play role in irrigation. In Indonesia, irrigated agricultural land produces 85% of national rice production and 95% of Indonesian people consume rice as a staple. However, 45% of irrigation infrastructure are damaged because of limited budget, low maintenance, incomplete irrigation network system, and Water User Association (WUA or HIPPA) performance in tertiary irrigation management are not yet optimal. And existing water storage capacity only cover 13% of agriculture land which is very low compare to neighboring country like Thailand.

Total agriculture land in East Java is 2,1 million ha and based on PRISMA calculation around 1,8 million ha or 84% of total agriculture land has limited or even no access to water for cultivation during dry season because of no irrigation infrastructure, damage existing irrigation infrastructure, very limited water supply from existing dam, and farmers limited capacity (financial and technical) to provide small irrigation for their land.

Quick facts:

Total wetland	Total irrigated wetland	Total non irrigated wetland	Dry land
8,186,470 Ha	4,781,495 Ha	3,404,975 Ha	11,5 mio Ha

Facts Source: Statistic Pertanian 2017



East Java

- Total Irrigated wetland (Ha) : 847,145
- Total non-irrigated wetland (Ha) : 239,872
- Total dry field (Ha) : 1,103,984
- Total number of rice farmers (HHs) : 2,800,000

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	108,605
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	546,302,123,977

Irrigation OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	-
Cumulative Outreach Projected to Dec 2023	108,605
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023	546,302,123,977

Value For Money (VFM)	Irrigation Overall
Investment Leverage Partner	-
Investment Leverage Sector	-
Investment Per HH:	-
Social Return:	-

8.1 Irrigation

Irrigation has three times more impact on farming productivity than other agricultural inputs, such as seed variety and fertiliser (TIRTA Program Design Document, 2014). Irrigation also offers the potential to (1) increase production and profitability per hectare per crop, (2) increase cropping intensity, and (3) reduce the risk of crop failure, which can be catastrophic for smallholder farming households with very limited resources and reserves. Eighty-five per cent of Indonesia's total agriculture land has limited access to water for irrigation during the dry season (Ministry of Agriculture, 2017).

Challenges and constraints

The key constraints to the pro-poor growth of the irrigation sector in Indonesia are the decline of investment in irrigation infrastructure in the past, the existing model which relies on public funding for capital investment, and poor management of water resources at highly subsidised rates.

Farmers are unable to access water for irrigation due to:

- **Highly limited number of technical and managerial irrigation consulting firms** serving the rural irrigation market, due to their lack of awareness of market potential, and inadequate capacity to provide solutions adapted to village need and affordability.
- **Welldrillers having limited technical capacity and supporting tools** needed to identify water points which have capacity matches with the planting need. They also have limited access to finance.
- **Major pump producers targeting government projects and industry markets**. Pump producers are aware of the sales potential at the village level, but face challenges entering the rural market due to their limited number of staff and financial capacity.
- **Absence of financial products dedicated to the irrigation service business** due to the limited knowledge of financial institutions regarding the business.
- **Contractors (civil and electrical) for village irrigation are available in the rural market**, but have limited knowledge of how to design a proper irrigation system.
- **Water-user associations/HIPPAs are non-functional and/or operating non-efficiently** due to lack of managerial and financial capacity, despite technical support and financial aid from the government. Water-user associations operate more as farmer groups than as for-profit business entities.
- **Private sector irrigation service providers are obliged to adopt informal rules at the village level to acquire an "informal permit to operate"** which causes uncertainty in terms of business sustainability and poses greater risks to investment. Central government does not set the "rules of the game" for private sector irrigation service providers, making their position even more vulnerable.
- **Absence of government regulations** to accommodate private sector involvement in the provision of village level tertiary irrigation.

Intervention areas

In this phase, PRISMA's irrigation sector will focus on working with scale agents interested in investing in irrigation in a rural setting, to:

- promote new and improved irrigation service providers for seed production and seed market farmers among off-taker companies (seed producers, feed millers and food processing companies) and related associations;
- promote irrigation contractor services providing both technical and non-technical advice to irrigation service providers among pump producers, pump sellers, irrigation providers, irrigation equipment importers and related associations, and
- promote irrigation expert services in terms of better advisory services and better equipment, to improve the capacity of irrigation contractors among public and private training centres, universities and research agencies.

Progress and achievement up to December 2018

In the first phase of the program, TIRTA partnered with 23 private sector irrigation service providers (individual entrepreneurs, HIPPAs, G-HIPPAs and BUMDes) which agreed to invest AUD 2.48 M in improving the irrigation system in 36 villages in Bojonegoro and Tuban (East Java). The total return on investment of these service providers was AUD 2.68 M, benefiting 10,746 smallholder farming households with a total income increase of AUD 4.28 M.

Subsector vision for systemic change

In the second phase of program implementation, PRISMA will focus on stimulating and increasing private sector participation and investment across different stages of the irrigation value chain to promote more efficient water use in agriculture, boosting farmers' production and productivity. Technical irrigation consultants will provide sound design and advice to irrigation providers, who in turn will invest in and provide a more efficient irrigation service, able to serve increasing numbers of smallholder farming households. Seed producers will promote the availability of irrigation services to their seed growers.

9. MAIZE

Maize Sector Summary

Maize is the second most important crop in Indonesia after rice. More than 20 million MTs of maize are grown each year on four to five million hectares of farmland. More than half is used to cater the ever-increasing demand for animal feed. It is a seasonal crop, with a surplus during peak harvest months and severe undersupply the rest of the year. The Government of Indonesia, under 'self-sufficiency' agenda, highly subsidized the sector. In 2017 around 80% of total harvested area is covered by the free seeds and subsidized fertilizers. It continued in 2018 and 2019 since The GoI still allocated free seeds to the farmers although using different program. The maize price has been increasing steadily over the year. The zero-import quota has further contributed to the higher corn price started in 2017. The national average productivity is 5.23 MT per hectare. However, the field observation and USDA data shows lower productivity around 3-4 MT per hectare, especially in Eastern Indonesia. PRISMA has identified a clear opportunity to increase maize production, productivity and quality as part of Indonesia's drive towards import substitution.

Quick facts:

Total Production	Total Harvested Area	National Productivity	Demand
28,924,015 MT	5,533,169 Ha	523 kg/Ha	3.4%

Facts Source: Statistik Pertanian 2018, Sensus Pertanian 2013

East Java

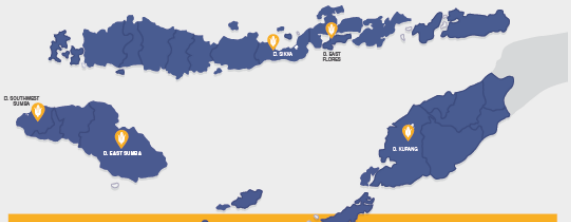
- Total Provincial Production (Ton) : 6,335,252
- Total provincial harvested area (Ha) : 1,257,111
- Total farm households in the sector : 1,922,318

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	45,603
Cumulative Outreach Projected to Dec 2023 (HHs)	55,116
Total NAIC up to Y19S1 (IDR)	105,115,642,675
Total NAIC to Y19S1 (%)	217.35%
Total projected NAIC to Dec 2023 (IDR)	124,797,735,259

NTB

- Total Provincial Production (Ton) : 2,127,324
- Total provincial harvested area (Ha) : 310,990
- Total farm households in the sector : 73,816

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	6,598
Cumulative Outreach Projected to Dec 2023 (HHs)	20,598
Total NAIC up to Y19S1 (IDR)	11,156,775,309
Total NAIC to Y19S1 (%)	47.54%
Total projected NAIC to Dec 2023 (IDR)	64,324,328,813



NTT

- Total Provincial Production (Ton) : 809,830
- Total provincial harvested area (Ha) : 313,150
- Total farm households in the sector : 522,612

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	29,601
Cumulative Outreach Projected to Dec 2023 (HHs)	55,302
Total NAIC up to Y19S1 (IDR)	47,750,343,801
Total NAIC to Y19S1 (%)	134.12%
Total projected NAIC to Dec 2023 (IDR)	88,222,933,397

Maize OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	81,802
Cumulative Outreach Projected to Dec 2023	131,016
Total NAIC up to Y19S1 (IDR)	164,022,761,785
Total NAIC to Y19S1 (%)	180.64%
Total projected NAIC to Dec 2023	277,344,997,469

Value For Money (VFM)	Maize Overall
Investment Leverage Partner	0.09
Investment Leverage Sector	2.63
Investment Per HH:	AUD 74.37
Social Return:	2.86

9.1 Maize Central Java

Central Java is the second largest producer of maize in Indonesia, accounting for around 16% of national production. Maize is a primary cash crop, engaging around 1.1 M farmers, with an average land size of 0.5 ha per household. However, growth in production is very low, at only 1.2% per year (2010-15). Over 87% of the farmers here already plant hybrid seed, obtaining average productivity of around 6 MTs per ha. Less than 2% of maize produced in the province is for human consumption; the remaining 98% is for the feed industry (the expansion of which in Central Java has led to a tremendous economic boost for farmers). Despite these opportunities, farmers still experience low profits from maize cultivation, especially in the peak harvest period during the rainy season; some have difficulty cultivating maize in the dry season. Improper application of inputs such as fertiliser and agri chemicals, and lack of good handling practices (GHP) also hinder farmers from obtaining optimum productivity, which can be up to 10 MTs per ha.

Challenges and constraints

Maize farmers in Central Java find it difficult to increase their income because of the following reasons:

- **Lack of access to limited post-harvest facilities** for storage and drying. Farmers in the province have a strong knowledge of GAP but a lack of access to appropriate technology and facilities for storage and drying. When the harvest period occurs during the rainy season, farmers tend to sell all their yield as soon as possible to avoid damaged grain and the resultant loss. This over-supply leads to off-takers bargaining aggressively to obtain lower prices.
- **Low production in some areas of Central Java** because of geographic and soil composition. Fertiliser has a significant contribution to make to maize productivity. However, some farmers experience insufficient supply because of competition from other crops. Farmers also experience pest and disease attack, in particular downy mildew (*Bulai*).
- **Lack of access to irrigation in some areas.** The absence of irrigation systems hinders maize production and reduces productivity. Establishing an irrigation service is considered costly especially in hilly areas; in low-lying lands farmers prefer to plant rice as it delivers a higher income when water is available. During periods of extreme drought, some farmers are unable to engage in cultivation, either of maize or other maturity crops (such as peanut or mung bean).

Intervention areas

To address these challenges and constraints, PRISMA will work with partners to:

- promote appropriate post-harvest services;
- promote the use of hybrid seed suitable for farming in identified pocket areas;
- improve GAP services and IPDM, and
- promote farming techniques suitable for the dry season.

Subsector vision for systemic change

In the second phase of program implementation, PRISMA aims to achieve a greater systemic change in the Central Java maize sector (a new province of intervention) by improving the capacity of key market actors. Input companies will continue reaching farmers in Central Java with GAP services and start to promote farming techniques suitable for the dry season. Off-takers will engage with farmers through partnerships and provide inputs and farming assistance in a timely manner to increase productivity. By 2023, the maize sector in the province will be producing more maize due to the use of improved hybrid seed, increased use of fertiliser, and better access to mechanisation to reduce cost and improve supply chain effectiveness.

9.2 Maize East Java

East Java is the country's province with the highest level of maize production, accounting for around 22% of national production. It produced 6.3 M MTs of maize in 2017, nearly twice that of Indonesia's second leading producer. There are 1,922,318 smallholder farming households involved in cultivating maize with a Poverty Probability Index (PPI) score of 65% in mainland areas and 75% in Madura Island.

As a result of the importance of maize production in the province, there is a ubiquitous presence of commercial actors (traders, feed millers and seed companies) along the maize value chain in East Java. Despite being the leading producer of maize and having the largest total harvested area in Indonesia, in 2017 average yields were only 5.04 MTs per ha, and were significantly below hybrid seed productivity, which can reach 10 MTs per ha with moderate use of GAP. Average maize yields for districts on Madura Island were as low as 1.89 MTs per ha (2017), attributable to the limited adoption of hybrid seed and the subsistence nature of maize farming in Madura.

Challenges and constraints – East Java, Madura

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

- **Use of local seed varieties and a lack 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.
- **Rainfed water system and perceived marginal soil**. About 76% of maize farming in Madura depends on rain as its irrigation source. With a lack of access to irrigation services, farmers risk harvest failure and lower yields in the second quarter of the rainy season (February–April).

Challenges and constraints – East Java, Mainland

Although the productivity rate of maize farmers is higher on the mainland is higher than on Madura Island, a number of constraints in the market prevent them attaining a higher income. These are:

- **Farmers experience difficulties in increasing maize production during the dry season in non-irrigated dryland areas**, mainly on East Java mainland, where it is common for dryland farmers to attempt a second maize crop after the rainy season.
- **Maize downy mildew disease is common and destructive.** With intensive maize farming and sugarcane farming areas located next to each other, this is very common and a serious risk in mainland areas.
- **Apparent illegal seed distribution in upland areas**. Upland farmers are less advanced at maize farming and less concerned than lowland farmers about the brand of maize seed. They prefer to use retained hybrid or illegal seed to reduce the sunk cost, especially for dry season cultivation of maize.

Intervention areas

To address these challenges and constraints, PRISMA will work with partners to:

- promote hybrid seed and the relevant GAP;
- optimise inputs (fertiliser, crop protection) and the relevant GAP;
- improve subsidy program policy;
- link off-taking services;
- increase access to irrigation and its services (for grain farmers and seed growers);
- promote appropriate financial products for maize farmers, and
- promote affordable mechanisation (planting machinery, drying and threshing service).

Progress and achievement up to December 2018

In the first phase of program implementation, PRISMA partnered with four private companies and facilitated them to promote hybrid maize seed with the appropriate GAP. These companies have experienced increased sales of up to 300% and consequently expanded their business in nearby districts. For example, PT DuPont Indonesia (Corteva Agriscience) has added three additional human resource personnel to continue expanding its business in Madura, while PT Syngenta has resumed business in Madura and hired an additional salesperson. Both companies expanded the partnership with PRISMA to include assessing new markets in

mainland East Java and developing business strategies. PRISMA also facilitated a public-private collaboration in Sumenep, Madura to improve the planning of subsidy distribution, which contributed to the expansion of maize cultivation by shifting the subsidy allocation to underdeveloped areas of Madura Island. By December 2018, PRISMA's maize interventions in East Java had resulted in the increased income of 40,629 maize smallholder farming households by an average of 234%.

Subsector vision for systemic change

In its second phase of program implementation, PRISMA aims to achieve a greater systemic change in the East Java maize sector by improving the capacity of key market actors. Seed producers, fertiliser companies and other input companies will continue reaching farmers in Madura Island and mainland East Java with GAP training. The government subsidy will shift to underdeveloped areas, allowing private companies to further expand their business. By 2023, the maize sector in East Java will produce more maize due to improved farmer access to hybrid seed and use of fertiliser, improved pest and disease management, and better hybrid maize cultivation techniques.

9.3 Maize NTB

NTB is among Indonesia's top ten maize-producing provinces, in 2018 accounting for 6.8% (2 M MTs) of the country's maize production (this compares to the contribution of East Java, the country's leading maize producer, of more than 21% of national production). Although its contribution is small, maize cultivation in NTB has increased rapidly, by more than 200% since 2013. This corresponds to a CAGR of 27.23% between 2014 and 2018. In comparison, the national CAGR was 12.14% during the same period.

Rapid growth in NTB's maize sector was driven by significant increases in the harvested area for maize, and it is estimated that there is an increase in the number of 66,000 new maize farming households. Between 2015-17, there was a 167,000 ha increase in maize farming area. Trends in food crop cultivation in NTB indicate that this increase was realised from switching 63,000 ha from other crops (such as soybean, mung bean, cassava and sweet potato) and 104,000 ha from the expansion of the planting area.

Challenges and constraints

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

- **Limited affordable options to access bank loans**. The use of hybrid seed requires sufficient supply of other inputs such as fertiliser, agri-chemicals (including herbicide and pesticide) and labour. Poor farmers have little money to support these and limited access to external financial resources. Some farmers rely on moneylenders who provide loans at exorbitant rates of interest.
- **Mechanisation to support agricultural activities has not been widely introduced**. Maize prices vary depending on the physical form in which it is sold: for example, grain is much more expensive than cobs. Particularly in Lombok, farmers do not have access to affordable maize threshing machines or service providers. In addition, the cost of labour is increasing, making the need to use agricultural machinery increasingly important.
- **Maize productivity does not reach its optimum level due to improper application of GAP**. Farmers are able to access only limited information from public extension officers, who only visit farmers at times of subsidy provision and proposal development. Input suppliers do provide information services; however, their delivery has not been effectively received by farmers.

Intervention areas

To address these challenges and constraints, PRISMA will work with partners to:

- promote good quality hybrid seed and the relevant GAP;
- optimising fertiliser inputs and the relevant GAP;
- promote financial products appropriate for maize farmers;
- promote access to affordable on-farm and off-farm machinery and services, and

- facilitate access to irrigation and its services.

Progress and achievement up to December 2018

In the first phase of program implementation, PRISMA partnered with the private sector to promote the use of improved hybrid maize seed and GAP through a financing model developed that it developed in collaboration with financial institutions and the AIP-Rural program, SAFIRA. The partner companies have experienced increased sales of up to 104% and expanded their business in nearby districts. PT BISI, for example, has hired an additional human resource member of staff to continue expanding the market in NTB. The financing model is proving to be popular with farmers, who perceive the product to be relevant and of high quality. BISI plans to replicate the model across other provinces in Indonesia.

PRISMA also facilitated collaboration between BISI and government extension services in West Sumbawa to introduce improved hybrid maize seed, and trained officers in maize GAP to enable them to disseminate the knowledge to farmers. By December 2018, PRISMA's maize interventions in NTB had increased the income of 3,764 maize farmers by an average of 66%.

Subsector vision for systemic change

In the second phase of program implementation, PRISMA aims to achieve a greater systemic change in the NTB maize sector by improving the capacity of seed producers and other input companies to reach out to farmers with GAP training. The government subsidy will transfer to underdeveloped areas, allowing private companies to expand their business further in the market. Off-takers will actively engage with farmers and provide better inputs and farming assistance. By 2023, the maize sector in NTB will be producing more maize due to the use of improved hybrid seed, increased fertiliser use, and better access to mechanisation and ICT, which will reduce costs and improve supply chain effectiveness.

9.4 Maize NTT

NTT is largely characterised by its drylands and a dry climate; it is Indonesia's twelfth largest producer of maize, contributing 809,830 MTs (2.9%) of national production in 2017[3]. With a greater harvest area than paddy, maize is the most widely grown crop in NTT, engaging 522,612 (62.5%) of all of the province's smallholder farming households[4]. However, growth production is very low, at only 0.9% per year (2010-16)[5]. Productivity is just 2.5 MTs per ha, less than half the current national average of 5.23 MTs per ha[6]. Unlike East Java and NTB, where most of the grain goes to supply milling operations, maize produced in NTT is used mainly for human consumption and for feeding household livestock. Local maize, which is the main variety grown, is popular because of its taste, cooking characteristics, and resistance to pests during storage.

In NTT, PRISMA has focused mainly on the island of Timor, whose five districts are all among NTT's top seven maize producing districts. Limited application of GAP and GHP, use of retained local seed varieties, and limited access to irrigation services are the main reasons for lower productivity here.

Challenges and constraints

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

- **Use of local seed varieties, with very limited GAP and GHP**. Many maize farmers are unaware of the benefits of using improved seed and continue to rely on local seed varieties which provide lower yields. Others are often reluctant to invest in better seed as their limited financial capacity prompts them to wait to obtain government subsidised seed. Moreover, they have the perception that local seed varieties are part of the local heritage and should be kept, erroneously believing that they are more suited for human consumption and more resistant to drought and weevil attack.
- **Farmers experience difficulties in increasing maize production during the dry season in non-irrigated dryland areas.** In NTT, the dry season maize planting area is just 7% of the rainy season

[3] Statistik Pertanian 2017.
[4] Hasil Survei Pertanian antar Sensus (SUTAS) 2018.
[5] Statistik Pertanian Nusa Tenggara Timur 2016.
[6] Statistik Pertanian 2017.

planting area, a much smaller percentage than in East Java (58%)[7]. Drilling wells to access groundwater is feasible and a good investment, considering that the NTT maize price doubles during the off-season. However, lack of irrigation service providers and the relatively high investment cost act as deterrents to farmers.

Intervention areas

To address these challenges and constraints, PRISMA works with private sector partners to:

- improve OPV seed production and promotion;
- promote affordable fertiliser and pesticide;
- promote the use of storage tools;
- promote the use of hybrid seed;
- promote irrigation services, and
- promote machineries.

Progress and achievement up to December 2018

In the first phase of programme implementation, PRISMA partnered with several small nurseries and facilitated them to promote OPV maize seed and the relevant GAP. OPV seed is selected because of its (1) similarity to local seed varieties in terms of taste, colour and drought resistance, (2) higher yield (3-5 MTs per ha), and (3) more affordable purchase price compared to hybrid seed. Alongside their supplying the government market, PRISMA facilitates nurseries to promote and sell to the market through retail channel development and marketing strategies (such as market storming and SMS text blasts), and to increase farmers' access to improved seed and GAP. By the end of 2018, total cumulative sales in the market had increased from 0 to 140 MTs, and the partnered nurseries had made further investments in machineries and warehouses.

Also in Phase 1, PRISMA conducted pilot interventions in storage solutions and hybrid seed. Results are currently limited; however, indications are that farmers can increase their income through implementing improvements in these two areas. Hybrid seed producers continue to be keen to work with PRISMA to develop their markets in NTT. By December 2018, maize interventions in NTT had resulted in increased income for 29,604 maize farming households by an average of 69%.

Subsector vision for systemic change

In its second phase of program implementation, PRISMA aims to achieve a greater systemic change in the NTT maize sector by improving the capacity of key market actors. Seed producers and other input companies will continue reaching NTT farmers with GAP training. The government subsidy will shift to underdeveloped areas, allowing private companies to further expand their business, and storage tool and irrigation service providers will actively promote their services to farmers. By 2023, NTT's maize farmers will have increased their production due to improved cultivation techniques and better access to improved seed, fertiliser, storage tools and irrigation.

[7] Ibid.

10. MECHANISATION

Mechanisation Sector Summary

APAC (Asia and Pacific) region projected as the market leader in the mechanisations that globally expected to grow at 7.69% in 2020. The market driver of mechanisation market are tractors and harvester machineries that accounted for 45% and 17% respectively and are expected to grow at 7.86% and 7.52% in 2020 (Technavio). Indonesia ranks amongst the top country on agriculture land area (Rank 5 based on FAO) that leads to top destination of mechanisation market in Asia. However, the slower adoption in mechanisation is occurred due to constant growth of agricultural labor in the top agricultural producer area (Java Island). Thus, the earlier adoption on mechanisation occurred in the area where labor are scarce i.e. Sumatra Island and Sulawesi Island. The decreasing of labor and increasing the cost of production in Java create opportunity to boost the level of adoption by creating a renting system that enables farmers to use mechanisation within affordable price.

Quick facts:

Total Horsepower
1.62 Hp/Ha

Total Availability Ratio of Mechanisation
57.06%

Number of Agricultural Tested Machine
279

Facts Source: Dept of Agriculture 2018, KATAM 2019, National Certification Institution 2019

East Java

- Estimated Mechanisable Area (Paddy) : 28%
- Total number of (Paddy) farmers within mechanizable area : 319,933
- Total Potential Market of Mechanisation (Paddy wetland) (Ha) : 639,864

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	30,543
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	6,108,480,000

Central Java

- Estimated Mechanisable Area (Paddy) : 28%
- Total number of (Paddy) farmers within mechanizable area : 281,465
- Total Potential Market of Mechanisation (Paddy wetland) (Ha) : 562,930 Ha

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	-
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	-

Mechanisation OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	-
Cumulative Outreach Projected to Dec 2023	30,543
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023	6,108,480,000

Value For Money (VFM)	Mechanisation Overall
Investment Leverage Partner	-
Investment Leverage Sector	-
Investment Per HH:	-
Social Return:	-

10.1 Mechanisation – combine harvester Central Java and East Java

East Java and Central Java provinces are Indonesia's largest producers of paddy; 39% of its farmers live here. Paddy is one of the country's primary cash crops, engaging around 5.7 M farming households in these two provinces. A government survey (2018) indicates that labour-related issues in Java (such as labour shortages and increasing labour costs) account for almost 34% of the challenges farmers face. From 2013-2018, agriculture labour wages for harvesting increased annually by 5.3% in Central Java and by 5.7% in East Java, in excess of the local inflation rate. Meanwhile, the main cost is that of labour, accounting for 47% of total production costs. At the same time, from 2012-17 the availability of agriculture labour decreased annually by 3.1% in Central Java and by 2.2% in East Java. The labour shortage and increasing labour costs can be addressed by agriculture mechanisation, in particular by combine harvester use[8].

Challenges and constraints

Five factors can impede combine harvester adoption:

- **Planting and harvesting consolidation**. The average farmer's land ownership in Java is 0.3 ha; a combine harvester can only reach economy of scale if it can harvest more than two ha/day. Simultaneous harvest is still a challenge as there is no strong institution that can coordinate planting and harvesting.
- **Land conditions**. A combine harvester cannot be used on land with extreme contours, is unreachable by road, muddy or rocky. It is only suitable for well-irrigated land with good road access.
- **Social norms**. Combine harvester users can face "social sanction" from manual labourers, especially in newly penetrated areas. When a farmer starts to use a combine harvester, manual labourers are reluctant to work for them in the future.
- **Limited private sector mechanisation providers**. Private mechanisation providers are found only in the central paddy production area in Northern Java. Most manufacturers have focused on the government market and neglected the private market.

Intervention areas

To address these challenges and constraints, PRISMA will:

- introduce the renting system to service machine providers, and
- promote service aggregator for mechanisation to match unmet demand and supply for the machine.

Subsector vision for systemic change

In the second phase of program implementation, PRISMA aims to improve farmer access to small and large machinery services in East and Central Java, leading to a more efficient farming process and reduced production costs. To achieve this, PRISMA will support manufacturers to develop better customer segmentation and targeting strategy, distribution model/network, service user demand activation, and aftersales services, which will lead to overall increased sales. PRISMA also aims to assist in the development of supporting functions in the mechanisation market system, such as a marketplace for large machinery services which allows better flow of service market information and transactions. These market improvements are expected to lead to a new segment of MSPs entering the market, due to the creation of a better understanding of machine service business potential and better access to the machines; this will be alongside current MSPs continuing to provide services and expanding their service area (and potentially adopting more advanced technology).

[8] On one hectare of land, combine harvester use reduces labour costs by up to 33% and labour work-hours by 97%.

11. MUNG BEAN

Mung Bean Sector Summary

Mung bean is an important crop in Indonesia, having high nutrients and ability to endure dry soil. Domestic consumption in 2018 is projected around 277 thousand MT (experiencing 2% decline annually). Mung bean production in Indonesia has been declining almost 3% annually (projected 235 thousand MT in 2018) with relatively low in productivity (1.1 MT/Ha in average) compared to high yield varieties (1.7 up to 2 MT/Ha), making Indonesia the 6th largest mung bean importer in the world. The national production has yet to fulfil the demand for mung bean consumption, especially for food processing industries who dominates the domestic consumption. PRISMA has identified a clear opportunity to increase mung bean production, productivity, and quality through commercializing high yield/certified mung bean seed varieties and promoting the use of GAP.

Quick facts:

Total production	Total harvested area	Total Productivity	Demand
235,000 MT	198,000 Ha	1,188 Kg/Ha	-2%*

Facts Source: Statistik Pertanian 2018, Sensus Pertanian 2013
*) Projected from BPS data of mung bean consumption by CAGR

East Java

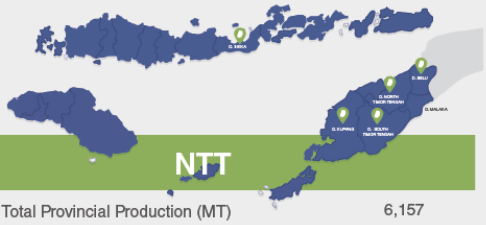
- Total Provincial Production (MT) : 46,925
- Total provincial harvested area (Ha) : 39,247
- Total farm households in the sector : 233,996

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	503
Cumulative Outreach Projected to Dec 2023 (HHs)	27,932
Total NAIC up to Y19S1 (IDR)	218,798,238
Total NAIC to Y19S1 (%)	37.23%
Total projected NAIC to Dec 2023 (IDR)	42,695,787,434

Central Java

- Total Provincial Production (MT) : 112,162
- Total provincial harvested area (Ha) : 90,411
- Total farm households in the sector : 258,455

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	16,229
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	42,309,003,000



NTT

- Total Provincial Production (MT) 6,157
- Total provincial harvested area (Ha) 9,914
- Total farm households in the sector 54,642

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	400
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	44,005,600

Mung Bean OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	503
Cumulative Outreach Projected to Dec 2023	44,561
Total NAIC up to Y19S1 (IDR)	218,798,238
Total NAIC to Y19S1 (%)	37.23%
Total projected NAIC to Dec 2023	85,048,796,034

Value For Money (VFM)	Mung Bean Overall
Investment Leverage Partner	0.13
Investment Leverage Sector	0.04
Investment Per HH:	AUD 2,484.14
Social Return:	0.02

11.1 Mung bean – Central Java

Central Java is the largest mung bean producer in Indonesia, accounting for around 40% of national production. After paddy, mung bean is one of the main crops for most farmers in Central Java, accounting for around 258,000 farming households in this province. However, domestic production is experiencing a decline of around 3% annually (projected from BPS data, 2016-19). Productivity in Central Java alone is 1.18 MTs per ha, slightly higher than national productivity (1.15 MTs per ha) but still lower than other provinces including South Sumatera, West Sulawesi, and Gorontalo. Although mung bean consumption has been decreasing around 2% annually (projected to be around 277,000 MTs in 2018), national production has yet to fulfil demand, resulting in high annual imports (projected to be around 61,000 MTs in 2018). Considering the high number of poor farmers working in the mung bean sector and the availability of input market actors, Central Java has very high potential to increase their production and productivity to meet national demand for mung bean consumption.

Starting in 2019, PRISMA is working with seed companies in Central Java to promote the use of certified mung bean seed and to increase farmer awareness of the benefits of applying GAP in their cultivation process, to increase both production and productivity, which may lead to a decrease in mung bean imports.

Challenges and constraints

There are several reasons why the mung bean sector in Central Java is unable to increase its productivity and production:

- **Mung bean farmers in Central Java do not use high yield mung bean seed varieties**. Most use retained/uncertified seed, which they consider more accessible and affordable. They lack awareness of high yielding varieties of mung bean seed, due to the very limited number of seed producers and agri-input kiosks in Central Java selling and promoting certified/high-yielding varieties of seed.
- **Mung bean farmers in Central Java do not apply proper GAP** due to their very limited access to GAP information, exacerbated by the traditional perception of most farmers that mung bean will grow without GAP. Mung bean is currently not a government priority programme, and public extension service providers therefore focus only on staple crops. Moreover, there is only a limited government budget allocated to incentivising extension services to disseminate GAP information for farmers.

Intervention areas

To address these challenges and constraints, PRISMA is working to:

- collaborate with private sector seed nurseries to produce more certified mung bean seed and to increase farmer awareness of the correct application of GAP;
- facilitate partnerships between the private sector and new contract farmers to increase availability of mung bean seed in the market, and
- facilitate partnerships between seed research institutions (such as Balitkabi) and the private sector to provide capacity building to selected contract farmers to produce better mung bean seed quality, as well as to ensure the timely availability of foundation seed.

Subsector vision for systemic change

In the second phase of program implementation, PRISMA aims to establish a better mung bean seed market and awareness of the correct application of GAP by improving the capacity of key market actors. Seed producers and agri-input kiosks will actively promote certified/high yielding varieties of mung bean seed and the importance of GAP. By 2023, more than 16,000 mung bean farmers in Central Java will experience income increase due to higher productivity, and better access to and knowledge of certified mung bean seed and GAP. This has the potential to substitute imports for mung bean.

11.2 Mung bean – East Java

East Java is Indonesia's second largest producer of mung bean; together with the largest producer, Central Java, the two provinces accounted for 68% of Indonesia's total production of mung bean in 2018. East Java has around 233,000 mung bean farmers, roughly half of whom are in Madura, while the rest are spread throughout 30 or more districts. Since 2008, mung bean production and its cultivation area has decreased in East Java, with only a slight increase in productivity, which is currently at 0.8 MT per ha.

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, which results in wide usage for crop rotation, particularly among poorer farmers. It is cultivated as an attainable interval cash crop in the dry season due to its low maintenance and production costs. Farmers in East Java 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 recent years.

Challenges and constraints

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

- **Farmers' perception of mung bean as a low maintenance crop**. The nature of mung bean's ability to grow with limited water and other agrichemical supplements impedes farmers from applying GAP and assigning high investment to mung bean.
- **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.
- 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.
- **Mung bean is not considered a nationally important crop** according to the government development strategy. As a result, extension services, which function with limited knowledge and resources, do not focus on mung bean. Nevertheless, there is a growing interest from government, as witnessed by several local government mung bean seed subsidy programs.
- **Limited market information on the mung bean market, especially the demand side**, has limited the knowledge of market actors, including government, to acknowledge the potential of mung bean market.

Intervention areas

To address these challenges and constraints, PRISMA is working with partners to:

- promote high-yielding variety of mung bean seed and GAP application through partnerships with seed companies, and
- develop new and high-yielding varieties of mung bean seed which match end market demand, by linking seed companies with research institutions.

Progress and achievement up to December 2018

In its first phase, PRISMA partnered with two private nurseries (CV Semi and CV Luwes) and multinational vegetable seed company PT EWINDO. In 2018 alone, the partnerships with the nurseries resulted in 1,034 beneficiaries, with a NAIC of IDR 218,798,238 and a more than 300% average income increase for each household. At the same time, in October 2018, EWINDO, previously listed as a horticulture seed company, obtained a licence to produce and distribute food crop seed. It attained its production target of 60 MTs and is ready to sell the mung bean seed nationwide by June 2019. As part of PRISMA's exit strategy of creating a service market for market research and consulting services, and as part of the partnership with EWINDO, a mung bean consumer behaviour survey was conducted by market research firm Kadence.

Subsector vision for systemic change

By 2023, PRISMA aims for around 24% of male and female mung bean farmers in East Java to have increased their productivity and quality by having access to quality mung bean seed. It will achieve this through assisting seed producers in developing their business portfolio and increasing their turnover by applying an effective marketing strategy to sell certified quality mung bean seed and educate farmers in GAP. Mung bean seed producers will be collaborating with research institutions and off-takers to create mung bean seed varieties which best meet end market requirements. This will result in mung bean farmers producing and selling a higher quantity of mung bean at a higher end price, and off-takers increasing their supply from local sources.

12. PEANUT

Peanut Sector Summary

Indonesia is the 14th largest peanut producer which contributes to 1.0% of global production share. Its production has been falling in 2014-2018 period, with 5.4% CAGR, due to declining in harvested area. Indonesia's peanut productivity is 1.3 ton/ha, which is relatively low compared to global level average. Despite its relatively low production, Indonesia is ranked as the 5th largest peanut consumer, which indicates its heavy reliance on import, putting Indonesia in the second top importer in the world. The top producers of peanut in Indonesia are mostly located in Java island, with East Java leading the production with 29% share in 2018, followed by Yogyakarta. Local producers are still unable to fulfill the growing demand from industrial food processors, therefore, there's a clear business opportunity to increase domestic peanut production volume and quality.

Quick facts:

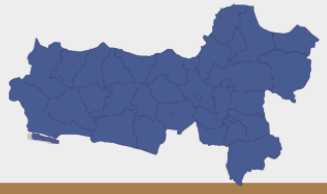
Total production	Total harvested area	National productivity	Demand
512.198 MT	372.915 Ha	1.373 MT/Ha	-3.8%

Facts Source: Statistik Pertanian 2018, Sensus Pertanian 2013

East Java

- Total Provincial Production (Ton) : 150.180
- Total provincial harvested area (Ha) : 116.087
- Total farm households in the sector : 498.830

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	1,064
Cumulative Outreach Projected to Dec 2023 (HHs)	18,243
Total NAIC up to Y19S1 (IDR)	2,363,117,160
Total NAIC to Y19S1 (%)	56.30%
Total projected NAIC to Dec 2023 (IDR)	15,871,870,736



Central Java

- Total Provincial Production (Ton) : 94.291
- Total provincial harvested area (Ha) : 65.164
- Total farm households in the sector : 449.426

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	-
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	-

NTT

- Total Provincial Production (MT) : 10,082
- Total provincial harvested area (Ha) : 11,581
- Total farm households in the sector : 48,793 HHs

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	579
Cumulative Outreach Projected to Dec 2023 (HHs)	579
Total NAIC up to Y19S1 (IDR)	1,422,348,516
Total NAIC to Y19S1 (%)	63.63%
Total projected NAIC to Dec 2023 (IDR)	1,422,348,516

Peanut OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	1,643
Cumulative Outreach Projected to Dec 2023	18,822
Total NAIC up to Y19S1 (IDR)	3,785,465,676
Total NAIC to Y19S1 (%)	59.49%
Total projected NAIC to Dec 2023	17,294,219,252

Value For Money (VFM)	Peanut Overall
Investment Leverage Partner	0.04
Investment Leverage Sector	0.03
Investment Per HH:	AUD 1,281.43
Social Return:	0.18

12.1 Peanut – Central Java and East Java

From 2014-18, Indonesian peanut production declined at the rate of 5.4% CAGR, before experiencing a slight increase in 2018. The decrease was mainly due to the increased maize subsidy in recent years, making it a more profitable crop alternative. Nationally, the top peanut producers are mostly located in Java Island, whose provinces makes up the top four producers' combined production share of 76%. East Java leads national peanut production, with a 29% share in 2018, followed by Yogyakarta and Central Java.

In Central Java, productivity levels have remained relatively stagnant over the past five years, at between 1.3 and 1.4 MTs per ha for its 268,858 farmers. East Java, which is home to 476,725 farming households, has consistently surpassed average national yields since 2011. Its productivity remains low compared to other top producers such as West Java (1.85 MTs/ha in 2015; an average of 1.63 MTs/ha from 2012-16) and Central Sulawesi (an average of 1.60 MTs/ha). There is a market opportunity to expand peanut production in these provinces to meet the growing demand from industrial food processors, who are looking to expand their procurement of local peanut.

Challenges and constraints

Despite its market potential, peanut farmers are unable to obtain substantial profits due to the following constraints:

- **Most farmers sell peanuts at the wet pod stage and sell direct from the farm gate, preventing them achieving profit from value addition**. This practice originated decades ago, making GPP uncommon among farmers. In addition, peanuts are always absorbed by the market, and at the trader's end, as any form and quality of peanut is marketable, there is no incentive for them to provide embedded services to farmers.
- **Farmers typically obtain peanut seed through three main channels**: (1) retaining seed from the previous harvest; (2) purchasing seed from collectors, traders or neighbours, and (3) planting a small quantity of peanut alongside their primary crop during the rainy season as a source of seed, **instead of using certified seed.**
- **Large processors now pay more attention to taste and are therefore starting to look for local kernel sources from previously imported peanuts**. However, most do not have GAP, GHP or GPP capability, and have limited staff, as their core competences are in trading or manufacturing. This is particularly so with large processors, who only interact with district suppliers when sourcing peanut.
- **Peanut is not a government priority crop; as a result, allocation of public extension services is limited**. In addition, no specialty input product for peanut exists, meaning that private input companies also provide no extended services to peanut farmers.

Intervention areas

To address these challenges and constraints, PRISMA is working with partners to:

- promote peanut off-taking partnerships;
- promote good quality seed for peanut production.

Progress and achievement up to December 2018

During the first phase of program implementation, PRISMA conducted two interventions in the East Java peanut sector, to promote good quality seed for peanut production, and to promote GAP, particularly in crop protection. For the former, PRISMA worked with a private sector nursery (CV Trubus Gumelar) and Balitkabi, a government research institution. Neither intervention yielded significant impact, due to the high initial cost of capital for nurseries and farmers (peanut cultivation requires 100-110kg seeds per hectare, the highest among all food crops), and Balitkabi's lack of commercial objectives. The second intervention partnered with private sector companies PT BASF and Syngenta, to introduced seed treatment, selective herbicides and other agro-chemical products. By December 2018, the peanut interventions in East Java had accessed 3,449 peanut farming households; user and beneficiary results will be assessed in the first semester of 2019. PRISMA also facilitated a multi-stakeholder collaboration between each crop protection company and GarudaFood, one of

the biggest peanut-based snack producers in Indonesia. A number of pilot activities with GarudaFood were also conducted to prepare for a further partnership with PRISMA, planned in the second phase.

Subsector vision for systemic change

Building on learning from the experience of the last phase, PRISMA Phase 2 is focusing on providing strategic advisory services for peanut processors to enable them to expand their business and source locally to slowly substitute imports. The program will also introduce farmers to advanced processing methods to add more value to their selling price. By 2023, men and women farmers in both provinces will benefit from a more profitable price. Food processors will also be better-informed on sourcing locations and factors affecting supply quality. Their technical capacity in terms of peanut GAP and GPP will also have improved by partnering with external partners. By the program's end, seed nurseries will be operating profitably in the market, with better location targeting; they will be informed of the commercial opportunity of the seed market, and well-connected with the existing network established in PRISMA's primary intervention.

13. PIGS

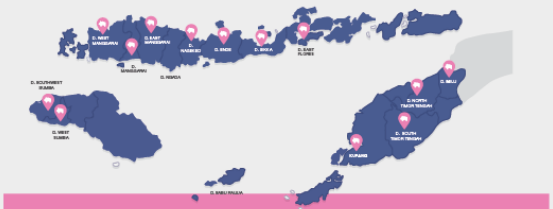
Pigs Sector Summary

The recent African Swine Fever outbreak in China decreased the pig population in the country by over 10%. With the largest pig population in the world, this sudden drastic decrease is affecting the global market as more countries are affected creating a gap in the market to be fulfilled. In Indonesia, pork production has increased by 4.5% annually since 2000 and is mostly influenced by feed prices and disease management. NTT with the largest pig population in Indonesia, has the opportunity to improve the overall pig production. Based on an assessment of the pig market system in NTT revealed that farmers were using traditional methods, including local breeds, traditional feed, and minimal pharmaceutical inputs which results to long rearing period - up to 2 years. Furthermore, the sector has the potential to improve the livelihood of farmers in NTT since pigs are considered valuable assets within local communities and an estimated 85% of the pig population in NTT is managed at smallholder farmers level.

Quick facts:

Total production	Total population	Consumption	Demand
327,215	8,542,488	0.26 kg/head	6% average growth in the last 4 years

Facts Source: Statistik Pertanian 2018, PRISMA Observation and Impact Assessment



NTT

- Total Provincial Production (Ton) : 34,414
- Total Provincial Population : 2,141,246
- Total farm households in the sector : 900,000

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	104,985
Cumulative Outreach Projected to Dec 2023 (HHs)	245,795
Total NAIC up to Y19S1 (IDR)	644,755,462,089
Total NAIC to Y19S1 (%)	598.06%
Total projected NAIC to Dec 2023 (IDR)	802,713,163,079

Pigs OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	104,985
Cumulative Outreach Projected to Dec 2023	245,795
Total NAIC up to Y19S1 (IDR)	644,755,462,089
Total NAIC to Y19S1 (%)	598.06%
Total projected NAIC to Dec 2023	802,713,163,079

Value For Money (VFM)	Pigs Overall
Investment Leverage Partner	0.44
Investment Leverage Sector	17.06
Investment Per HH:	AUD 30.55
Social Return:	20.10

13.1 Pig – NTT

NTT has the largest pig population of any of Indonesia's provinces; its 1.8 M pigs account for 23% of the national pig population. An estimated 85% are managed by around 900,000 smallholder farmers, rearing an annual average of two pigs per household. The development of the pig sector is driven by its cultural and religious significance; about 92% of NTT's 5.4 M inhabitants are non-Muslim and generally considered to be pork eaters. Despite having the country's largest pig population, the overall production and market is underdeveloped. A pig is normally slaughtered at around 100 kg, a weight which can be achieved at eight months if farmers use a good breed with good rearing practices. However, a PRISMA assessment of the pig market system in NTT revealed that farmers were using traditional methods, including local breeds, traditional feed, and minimal pharmaceutical inputs, resulting in a rearing period of up to two years.

Challenges and constraints

Farmers are unable to increase their pig productivity for five main reasons:

- **Use of low-quality local breeds instead of high quality breeds**. The high prevalence of low quality breeds in NTT is due to interbreeding (which leads to low productivity of sows), high mortality rates, low weight gain, and the overall poor health of piglets.
- **Use of traditional feed and rearing practices**. These are time-consuming for the farmer, who has to find raw materials, generally using the trunk of the banana tree or food waste from households, markets, restaurants and other sources. Farmers then boil it before feeding it to the pigs. This traditional feed also has low nutritional content, leading to low daily weight gain and increasing the risk of disease.
- **High mortality rate of stillborn piglets** due to interbreeding of low quality pigs. Combined with poor breeding practices (including poor pen design and the usage of low quality feed during the gestation period), mortality can occur before, during or after farrowing.
- **High incidence of epidemic diseases causing slow weight gain and even death**. Lack of farmer access and willingness to apply health products, and information on how to use them, as well as poor application of biosecurity, can hamper pig growth due to sickness or death. The incidence of classical swine fever (hog cholera) in recent years and the looming threat of African swine fever need to be addressed if farmers are to avoid the circumstances that create these.
- **Underdeveloped live pig and pork end market.** While smoked pork (*sei*) is widely available in Kupang and Timor Island, this is not apparent in other NTT islands. In NTT, the demand for continuity of pork supply is still very low, and live pig demand is highly dependent on religious and cultural ceremonies (95% in Flores, 98% in Sumba, 68% in Timor). At the same time, pig farmers lack the operating capital to support pig farming during the rice planting season.

Intervention areas

To address these challenges and constraints, PRISMA is working with partners to:

- improve rural pig breed quality through the government Village Hybrid Pig Program, a system able to reduce inbreeding by encouraging boar rotational cross-breeding;
- improve breeds and the breeding system at the farmer level by promoting quality semen and AI services, and ensuring these are accessible to farmers;
- build the capacity of farmers and ISPs in pig animal husbandry (breeding, rearing, feeding) and health management practices to reduce the risk of disease and the pig mortality rate;
- improve traditional feed and feeding practices by using complete feed, concentrate, additives and/or supplements to help boost pig farming productivity;
- improve production of traditional fodder (including moringa, leucaena, cassava, seaweed, sweet potatoes, taro, sago, pumpkin, squash and other root crops) to make it readily available and help minimise costs for farmers using local crops for livestock feed;

- develop and disseminate breeding strategy guidelines to strengthen the pig market at the provincial and district levels, and
- increase pig absorption from the commercial pork market by linking farmers/pig producers with buyers, and to facilitate capacity building for butchers, processors and the end market, including promotional activities/services.

Progress and achievement up to December 2018

In the first phase of program implementation, through its co-facilitators Hivos and SNV development agencies, PRISMA partnered with seven private feed companies[9] to improve the productivity of pig farming in NTT by promoting the use of good quality feed. Most of these partners were unfamiliar with the potential of the NTT market, and the farmers were unfamiliar with the partners' feed products. The intervention has shown the market actors a potentially unexplored market, which is now growing by 42% per semester.

An additional six feed companies crowded into the market by copying the PRISMA business model[10] (two have now exited the NTT market).

PRISMA also partnered with leading pharmaceutical company PT Medion Ardhika Bhakti to promote the use of animal health products and good rearing practices, and to strengthen and expand its distribution network in NTT.

During a hog cholera outbreak in 2017, PRISMA facilitated provincial and district government representatives to hold a workshop involving all relevant stakeholders (including national government, and private and public sector actors) to take immediate action to contain the disease. The collaboration took a step further when the vaccine distributors started training local government vaccinators to strengthen their capacity to administer vaccines and provide better veterinary services to farmers. From this collaboration, PRISMA facilitated vaccine companies (including PT Boehringer Ingelheim Indonesia and PT Romindo Primavetcom) to enter the NTT market themselves, without further support.

By December 2018, pig interventions in NTT had increased the income of 110,066 pig farming households by an average of 172% per household.

Subsector vision for systemic change

In the second phase of program implementation, PRISMA aims to achieve an income increase for a minimum of 250,000 smallholder pig farming households (26.7% of NTT's total of 935,000) by 2023. This will be achieved by providing farmers with access to and information about improved pig breeds, quality feed, pharmaceutical products, pig husbandry practices, linkages to downstream markets, and a favourable regulatory environment.

Also in Phase 2, the key actors (including feed producers, pharmaceutical producers, breeders) and downstream market actors will continue activity in existing markets, achieving profits and actively expanding their business to reach smallholder farming households in new areas. Pig breeding centres will continuously provide quality breeds as well as AI services to farmers to establish a sustainable breeding system in the market. The increase in better production of piglets at the farm level will stimulate the growth of downstream market actors (including traders, abattoirs and processors) and improve their skills and capacity. In addition, policymakers will continue to create a conducive business regulatory environment to support sector growth.

[9] PT Charoen Pokphand Tbk, PT Japfa Comfeed Tbk, PT Malindo Feedmill Tbk, PT Sierad Produce Tbk, PT Cargill Indonesia Tbk, PT Sinar Terang Madani and CV Rembu Tedeng.

[10] PT Gold Coin Indonesia, PT Panca Patriot Prima, PT Cheil Jedang Indonesia, CV Sama Untung, CV Mentari Nusantara, and CV Babi Muda Indonesia.

14. POULTRY

Poultry (Local Chicken Focused) Sector Summary

Poultry meat is the largest growth contributor in the animal protein market globally and nationally. The number of poultry farmers is also the highest which accounts for 39% of total livestock farmers. Majority of chicken farmers rear local chicken, which has low productivity due to lack of knowledge and skill in good poultry husbandry practice. Ayam Kampung Asli is the real native chicken breed in Indonesia. Farmers still rear them traditionally in their backyard using local sourced feed, which results in long rearing period and high harvest price. Furthermore, there is still unfulfilled demand for real local chicken that is hard to fulfil due to long rearing period and low supply.

Quick facts:

Total production	Total National Production	National Consumption	Demand increasing
310,959,951	313,800 Ton	0.78 kg/head or kg/capita	25%

Facts Source: Statistik Pertanian 2018

East Java

- Total Provincial Production (MT) : 36,694,278
- Total Provincial Population (Ha) : 43,168
- Total farm households in the sector (HHs) : 1,619,027

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	7,500
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	1,350,000,000

Central Java

- Total Provincial Production (MT) : 42,446,187
- Total Provincial Population (Ha) : 32,786
- Total farm households in the sector (HHs) : 1,607,598

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	7,500
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	1,350,000,000

NTT

- Total Provincial Production (MT) : 10,430,260
- Total Provincial Population (Ha) : 11,166
- Total farm households in the sector (HHs) : 345,014

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	10,000
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	1,800,000,000

Poultry OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	-
Cumulative Outreach Projected to Dec 2023	25,000
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023	4,500,000,000

Value For Money (VFM)	Poultry Overall
Investment Leverage Partner	-
Investment Leverage Sector	-
Investment Per HH:	-
Social Return:	

14.1 Poultry East Java and Central Java

East Java and Central Java are two of the largest producers of native chicken in Indonesia, providing 12% and 13% of national production respectively. Native chicken is still in high demand, despite the existence of commercialised broiler chicken. Total consumption in 2018 was 0.782 kg/capita (a total of over 2 M MTs of meat) while production itself only counts for 313,810 MTs per year. The long rearing time per cycle compared to broiler chicken and the low productivity of hatching eggs are the main causes of the supply side constraint.

In Java, farmers breed local chickens along with layer chickens, resulting in higher yields of eggs hatched to be native-built chicken. The Jowo Super (or "Joper") breed can be slaughtered after only two months (rather than the six months needed for native chicken, whose characteristics are similar and for which it is considered a good substitute) and is likely to fulfil the demand for native chicken. Joper farmers are scattered throughout the two provinces, and by adopting similar rearing methods and practices for Joper to those used for broiler chicken, have the potential to make a profit per every 100 chicks reared. As Joper is aimed to be a substitute for native chicken, the supply of carcass meat mostly goes to B2B markets, such as restaurants and cafés. In terms of price comparison, Joper is cheaper than native chicken but more expensive than broiler chicken.

Challenges and constraints

- **No standardisation of DOC**. The Joper market is unregulated, with no standardisation of good quality DOC; this causes losses to farmers due to high mortality rate of chicks.
- **Niche B2B markets**. The end market for Joper chickens is hotels, restaurants and cafés. This can be viewed as an opportunity when the market is still underdeveloped; however, it could also pose a threat for the sector, as the Joper supply is increasing and the output market cannot absorb it.
- **Opportunity outside Java**. There is no Joper DOC hatchery in other provinces, such as NTB, NTT, Papua, and West Papua. However, due to increasing population and price rises, the demand for local chicken is continuing to increase, created a demand for Joper. Farmers continue to import DOC from Java Island, incurring high transportation costs, which results in the price of both DOC and live birds to be higher than in Java.

Intervention areas

PRISMA plans to target poor farmers who are recorded as being part of the government *Bekerja* grant program in East Java and Central Java (the majority of Joper farmers in these two provinces are not poor). These are new farmers who lack husbandry knowledge and market information, and PRISMA will intervene to facilitate improved market linkage and to promote contract farming between farmers and hatcheries, through DOC resellers and live bird traders.

Subsector vision for systemic change

In the second phase of program implementation, PRISMA aims to improve income for at least 26,000 poultry farmers (that is, 26% of the 99,039 potential Joper farmers in Malang, Blora and Grobogan districts) by facilitating the establishment of a national standard for Joper and other local chicken hatcheries, as well as for feed producers, pharmaceutical companies, and live bird traders, with the aim of engaging poultry farmers in contract farming, while at the same time embedding GRP knowledge and market information in a conducive regulatory environment.

14.2 Poultry NTT

There is a demand gap for chicken meat and eggs in NTT, with around 70% being imported from Java and Bali. There is just one broiler hatchery in NTT, owned by Charoen Pokphand in Kupang; another is planned for Nagekeo, Flores. The number of broiler farmers in NTT remains small compared to Java, with around 120 in Timor Island producing less than 250,000 chickens each month. The price of chicken meat and live birds is also considered high in NTT, at times being double that of Java.

Given the high price and lack of local supply of broiler chickens, farmers of local chicken continue to rear poultry only for household consumption. A few local poultry farmers also target bulk buyers, such as restaurants. These farmers tend to buy adult chickens to breed with their own birds, and there is no supplier

for high quality local chicken in NTT, unlike in Java. BPTP Kupang is the sole research centre breeding KUB chicken[11]; however, its capacity is too low to provide a constant supply of KUB DOC.

Challenges and constraints

The major challenges and constraints faced by the poultry sector in NTT are:

- **Broiler carcasses and egg supply in NTT are still limited**. Opportunities therefore exist to improve the supply.
- **High production risk at the farmer level due to the exposure of transmitted disease, poultry cannibalism, and the chickens' vulnerability to stress**. Farmers needs to start at a large scale due to the small profit margin per chick and high initial investment and, as part of the production process, need to master advanced rearing practices in order to minimise loss.
- **Ineffective rearing practices leading to increased loss or lower income** unless the farmer is involved in contract farming.
- **Lack of DOC and feed supply**, as there is only one broiler hatchery in NTT and no accessible high quality feed miller. DOC are imported from Java, doubling costs because of high transportation costs, and the feed supply is unstable because of resellers' reliance on stock from Java.
- **High prices of DOC and feed caused by high transportation costs**. The capacity of local hatcheries currently cannot cope with DOC demand, so they continue to rely on imports from Java. This creates a domino effect, as the feed price is impacted by maize imports, currency fluctuations, and the global maize price, while the input price (that is, of DOC) is highly affected by feed price.

Intervention areas

To address these challenges and constratints, PRISMA will facilitate market linkage of high quality local chicken (KUB chicken) hatcheries between Java and NTT, triggering the smaller NTT hatcheries to provide better quality local chicken. Better quality local chicken breeds can trigger efficiency in local chicken rearing and reduce carcass price in the market.

Subsector vision for systemic change

In the second phase of program implementation, PRISMA aims to improve the income of at least 15,000 poultry farming households (10% of 150,000 potential poultry farmers in NTT) by facilitating their improved access to GRP and market information. It will achieve this through an increase in hatcheries, feed producers, pharmaceutical companies and downstream markets, enabling farmers to rear and sell more chickens in a supportive regulatory environment and with the relevant government permits.

[11] Kampung Unggul Balitnak (or 'Balitnak's superior kampung' chicken), bred and so-named by BPTP, the Indonesian Animal Research Centre.

15. RICE

Rice Sector Summary

Indonesia is the 3rd largest rice producer as well as consumer in the world, only behind India and China. This is hardly surprising, looking at the population size and the percentage of people who see rice as staple food. Indonesia was ranked at 27th in global productivity level, 5.41 MT/HA in 2016, slightly higher than the world average productivity 3.90 MT/HA. Indonesia productivity level is still behind Chine (6.93MT/HA) and Vietnam (5.58MT/HA) in Asia, and far behind non-producing countries such as Australia (10.23MT/HA), Egypt (9.3 MT/HA), Uruguay (8.5 MT/HA) and US (8.1MT/HA). Indonesia growth population is increasing, and the main effect of the population growth is: decreasing agriculture land. Java Island, and especially East Java is the main source of Indonesian rice supply. Maintaining the current production with increasing the yield in the developed area – East Java - as well as expanding to new areas

Quick facts:

Total production
56,537,774 MT
Un-milled Dried Paddy

Total harvested area:
10,903,835 Ha

Productivity:
5.41MT/Ha

Demand increasing
1.89%

Facts Source: BPS KSA 2018

East Java

- Total Provincial Production (MT) : 10,537,922
- Total Provincial Population (Ha) : 1,828,700 HA
- Total farm households in the sector (HHs) : 2,654,472 HH

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	62,198
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	210,814,560,000

NTB

- Total Provincial Production (MT) : -
- Total Provincial Population (Ha) : -
- Total farm households in the sector (HHs) : -

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	2,468
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	1,234,200,000

Rice OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	-
Cumulative Outreach Projected to Dec 2023	64,666
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023	212,048,760,000

Value For Money (VFM)	Rice Overall
Investment Leverage Partner	0.25
Investment Leverage Sector	-
Investment Per HH:	-
Social Return:	-

15.1 Rice East Java

Indonesian rice production is concentrated in Java Island, where just three provinces (East Java, West Java and Central Java) account for 52.34% of total national production. Of these three, East Java is the number one rice producer in Indonesia. It contributes 19% of the country's total rice production, with approximately 6.7 MTs milled rice from a 1.8 M harvested area. In 2016, it ranked second in productivity, with 5.76 MTs unmilled dry paddy per ha, behind Bali with 5.97 MTs. Rice is the province's main staple crop, with nearly 98% of inhabitants depending on it for their main source of food; most households spend around 20% of their income on rice. Rice farming is also a major source of employment, especially for the poor (four-fifths of Indonesia's rice production is grown by small-scale, low income farming households).

Although current supply has been able to satisfy (and even exceed) consumption for East Java itself, around 1.7 M MTs of rice is distributed to other provinces which produce less than they need. Making rice production and availability resilient in East Java is therefore very important, to avoid high risk in terms of securing future food availability. Increasing industrialisation in Java Island, especially East Java province, has affected cultivated land (particularly that given over to rice), making it necessary to improve production using improved seed and cultivation practices, and efficient farming methods.

Challenges and constraints

PRISMA will focus on addressing the following constraints:

- **Use of low quality (retained) seed**. Many rice farmers are unaware of the benefits of using improved certified seed and rely on retaining current varieties, which produces lower yields with a higher rate of crop failure because of pest and disease (using the same variety for more than ten years can incur a very high crop failure risk). In addition, many farmers rely on subsidised government seed, another reason for their unwillingness to invest more in improved seed.
- **Unavailability of hybrid seed**. Although awareness of the benefits of hybrid seed has been increasing in some areas, the seed itself is often unavailable in the market. The main reasons are the high investment cost of seed production affecting the domestic market, and government policy affecting the import of commercial hybrid seed.

Intervention areas

To address these challenges and constraints, PRISMA is working with partners to:

- promote and support production of hybrid and inbreed seed;
- improve policy of rice especially on hybrid seed import and seed subsidy;
- link off-taking services;
- optimise inputs and GAP;
- improve access of grain farmers and seed growers to irrigation and its services;
- promote appropriate finance products to farmers, and
- promote affordable mechanisation (cultivation: planting machinery; post-harvest: drying and threshing).

Progress and achievement up to December 2018

In the first phase of program implementation, PRISMA collaborated closely with PT Agrosid Manunggal Sentosa, facilitating the company to promote vegetable seed and the relevant soil treatment products in East Java. Both PRISMA and Agrosid acknowledged the potential of promoting rice hybrid seed through improved soil GAP (because hybrid seed requires soil management to achieve better yields), and the partnership was soon expanded to promote the seed in NTT, NTB, Papua and West Papua. In 2018, as a result of this partnership, Agrosid experienced increased sales of rice hybrid seed of up to 30%. PRISMA will conduct a full impact assessment of the intervention in the first semester of 2019.

Subsector vision for systemic change

PRISMA Phase 2 aims to achieve a greater systemic change in the East Java rice sector through the usage of improved seed, smart crop management, and good post-harvest practices. By 2023, farmers will be resilient to environmental changes (soil, water and climate changes), pest and disease, and dependency on the government seed subsidy by using improved seed (that is, certified inbred and hybrid seed) with the appropriate GAP.

16. SEAWEED

Seaweed Sector Summary

As the world's largest producer of red seaweeds, Indonesia's seaweed cultivation is one of the main income-generating opportunities for its coastal communities, particularly in the east. The rise of both local and global seaweed demand in the past 2 years has pushed prices to triple in 2017, and has remained stable at high ranges ever since. This growing demand has not been met by our local production – with a steady decline of 8.6% annually since 2015 – attributable to simultaneous factors such as increasingly unpredictable weather, poor cultivation techniques, as well as the deteriorating quality of seedlings. Responses to this concerning condition have been largely made by the public sector, local and national governments alike; aid for seedlings and processing units that aimed to spur production and value addition – but has now become inefficient and entrenched. Furthermore, the specific issue of poor-quality seedlings has been addressed by various quasi-public research institutions through the creation of improved seedlings – which, in the years of trial to date, have shown poor performance.

Quick facts:

Total production	Total harvested area	Productivity	Demand
11,050,301 MT	267,814 Ha	41.26 MT/Ha	-

Facts Source: DJPB 2016, PRISMA internal survey

NATIONAL

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	1,510
Cumulative Outreach Projected to Dec 2023 (HHs)	1,710
Total NAIC up to Y19S1 (IDR)	540,011,780
Total NAIC to Y19S1 (%)	10.98%
Total projected NAIC to Dec 2023 (IDR)	57,440,758,405

Seaweed OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	1,510
Cumulative Outreach Projected to Dec 2023	10,231
Total NAIC up to Y19S1 (IDR)	540,011,780
Total NAIC to Y19S1 (%)	10.98%
Total projected NAIC to Dec 2023	57,440,758,405

Value For Money (VFM)	Seaweed Overall
Investment Leverage Partner	0.75
Investment Leverage Sector	-
Investment Per HH:	AUD 1,512.20
Social Return:	0.02

16.1 Seaweed National

As the world's largest producer of red seaweeds, seaweed culture provides one of the major income-generating opportunities for the country's main coastal communities, particularly in eastern Indonesia. From 2016-18, the increase in demand for local and global seaweed has tripled raw dried seaweed prices (from IDR 7,200 to IDR 22,000 between July and December 2017), which have since remained fairly stable, at around IDR 17,000-23,000. This growing demand has not been met by local production; numbers have declined steadily by 8.6% annually since 2015, attributable to factors including increasingly unpredictable weather, poor cultivation techniques, and the deteriorating quality of seaweed seedlings.

Local and national government have made some advances in increasing production through direct subsidies, by establishing nursery and processing SOEs, equipment and inputs. However, an initial subsidy intended to boost sector growth has become entrenched and led to minimal impact, inefficiency and poor sustainability. Several quasi-public research institutions have attempted to address the issue of poor quality seedlings through the creation of tissue culture seaweed seedlings. However, in trials these have shown poor performance.

Challenges and constraints

Farmers are unable to increase seaweed production and productivity because of these main reasons:

- **Meagre production and productivity due to lack of knowledge and information** on seedling-specific and general cultivation practices. Many seaweed farmers treat seedlings and production seaweed in the same way, decreasing productivity by using poorly treated retained seedlings.
- **Subpar access to improved seedlings due to the non-existence of permanent, localised nurseries**. With high market distortion in the seaweed seedling market, private ISPs are disincentivised to establish nurseries; they also lack knowledge of the seaweed seedling business and technicalities, especially how to deal with the new breed of tissue culture seedlings which needs special care and attention in its initial stages.
- **Substandard quality of improved seedlings due to lack of research, constraining budget and infrastructure, and poor management of development centres**. Current tissue culture seedlings have not been able to support market needs, in terms of both quality and quantity.

Progress and achievement up to December 2018

During its first phase of programme implementation, PRISMA addressed constraints to price and productivity through engaging downstream raw dried seaweed players, supporting them to promote seaweed GAP information through demonstration plots (which also act as local nurseries) and seaweed campaigns, along with quality feedback to obtain a better price. However, impact was suboptimal, as addressing the myriad factors affecting price proved unattainable, as did a one-size-fits-all method of GAP application. Emphasis on private players in NTT indicated a need to involve the public sector, as the multifaceted constraints in seaweed sector development still need government enforcement. These interventions led to the piloting of a seaweed nursery model, which may become a point of exploration in building future interventions. By December 2018, seaweed interventions in NTT benefited 1,510 smallholder farming households.

In Papua and West Papua, PRISMA's intervention worked to link local government, financial institutions, local off-taking ISPs, and central off-takers to develop the seaweed sector and induce income in coastal communities. Being a special case at best, the focus on opening up market access for the seaweed sector presented multilevel challenges to developing a complete market system, indicating the need to involve a multitude of actors, both public and private. This intervention has brought the issue of seedlings to centre stage; nursery models, became the heart of a working market system, especially in new, rapidly developing seaweed areas. Seaweed interventions in Papua and West Papua will be assessed in the second semester of 2019, with a forecasted number of 1,377 seaweed farming households having increased their income from the intervention.

Intervention areas

Given the steady growth in demand in the seaweed sector and the enormous untapped potential of improved seaweed seedlings to increase productivity, PRISMA aims to revamp and expand seaweed interventions to achieve nationwide coverage through engaging with the Ministry of Marine Affairs and Fisheries (MMAF), to:

- induce partnerships for improving improved seedling research and production, and
- improve the MMAF strategy of improved seedling (and cultivation knowledge) provision and distribution system.

Subsector vision for systemic change

In its second phase of program implementation, PRISMA aims to achieve a greater systemic change in the seaweed sector by supporting MMAF to induce partnerships aimed at improving (1) improved seedling research and production, and (2) the MMAF strategy of devising an improved seedling (and cultivation knowledge) provision and distribution system. MMAF will use real-time data to review and revise policies to support the seaweed seedling market, integrating private sector actors and supporting development centres in producing high quality tissue culture seedlings. Development centres will continue to produce quality tissue culture seedlings and distribute them through local government and ISPs, expanding their scope to new cultivation areas. By 2023, the seaweed sector will be producing more seaweed due to the use of and better access to quality improved seedlings, as well as the use of better seaweed seedling cultivation techniques.

17. SHALLOT

Shallot Sector Summary

Shallot is one of the seven major commodities to become priorities of Government of Indonesia, as volatility in market prices has a significant impact on food price inflation. Indonesia is accounted as the 16th largest shallot and onion producer in the world. In the past five years, Government of Indonesia has focused to increase the shallot production and develop new shallot planting area. As a result, Indonesia experiences a growth of 9.82% in term of production area and the production is also boosted by 10.13% from 2011 to 2016. By 2016, Indonesia has achieved self-sufficiency in shallot crop with zero import in that year. However, shallot sector is still a major issue in Indonesia due to the volatile price.

Quick facts:

Total production	Total population	Productivity	Demand
1,470,155 MT	158,172 Ha	9,290 MT/Ha	-10%

Facts Source: Statistik Pertanian 2018

East Java

- Total Provincial Production (MT) : 306,316
- Total provincial harvested area (Ha) : 37,157
- Total farm households in the sector : 47,360

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	1,540
Cumulative Outreach Projected to Dec 2023 (HHs)	1,540
Total NAIC up to Y19S1 (IDR)	4,928,000,000
Total NAIC to Y19S1 (%)	17.49%
Total projected NAIC to Dec 2023 (IDR)	4,928,000,000

NTB

- Total Provincial Production (MT) : 195,458
- Total provincial harvested area (Ha) : 17,904
- Total farm households in the sector : 17,711

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	8,028
Cumulative Outreach Projected to Dec 2023 (HHs)	13,028
Total NAIC up to Y19S1 (IDR)	30,450,552,840
Total NAIC to Y19S1 (%)	58.91%
Total projected NAIC to Dec 2023 (IDR)	37,188,293,840

Shallot OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	9,568
Cumulative Outreach Projected to Dec 2023	14,568
Total NAIC up to Y19S1 (IDR)	35,378,552,840
Total NAIC to Y19S1 (%)	52.24%
Total projected NAIC to Dec 2023	42,116,293,840

Value For Money (VFM)	Shallot Overall
Investment Leverage Partner	0.13
Investment Leverage Sector	0.79
Investment Per HH:	AUD 156.91
Social Return:	2.36

17.1 Shallot Central Java, East Java, and NTB

Central Java, East Java and NTB are Indonesia's top three shallot producing provinces, and also allocate the most acreage of any province to shallot cultivation (74% of the total national shallot production area). However, Ministry of Agriculture data indicates a decreasing trend in productivity, which is concerning for the government, as shallot is a commodity which drives up inflation at the national level. Most shallot farmers use retained bulbs as planting material, which is costly; they also apply pesticide heavily as a way of protecting their investments, further increasing their costs.

Challenges and constraints

- **Volatile price**. Farmers do not necessarily reap high profits directly after each harvest, due to the high price volatility of the product.
- **High production costs.** Farmers also spend a large amount of money on chemical inputs to combat the high incidence of pest and disease.
- **Alternative markets have specific requirements.** As a buffer against price volatility, farmers sell their harvest to alternative markets (for example, the processing industry and the modern market), offering relatively fixed prices through the contract farming model. However, these two alternatives require certain specifications which are usually hard for the farmers to meet.
- **Nurseries producing true shallot seed (TSS) are still not common**. Shallot farmers using TSS face a longer growing time than that needed when using retained (and thus lower quality) seed. A possible solution to this is for the intervention to work first with the TSS nurseries to increase its availability. However, because shallot farmers are still largely unaware of the potential, alternative markets that would open up to them (and lead to increased income) if they used TSS, they do not demand it. As a result, potential TSS nurseries are unconvinced that TSS seedlings will sell well in the market and are reluctant to invest in their production.

Intervention areas

In the second phase of PRISMA, the project's shallot interventions will merge with other interventions in the crop protection sector and focus more on the judicious use of pesticide.

Progress and achievement up to December 2018

In the first phase of program implementation, PRISMA's shallot sector worked to provide good quality seed (by partnering with two major Indonesian seed providers, PT EWINDO and Bejo Zaden) and in promoting IPDM as an alternative to crop protection practice (by working with partners interested in exploring and promoting IPDM in shallot cultivation, including PT Solbi, CropLife Indonesia and PT Nufarm Indonesia).

By December 2018, PRISMA's collaboration in the shallot sector resulted in 13,179 households benefiting from activities, a number which has the potential to be much larger. There are 226,234 shallot farming households in Indonesia, located mainly in Central Java, East Java, West Java, NTB and Papua; the top two provinces combined represent 50% of the total Indonesian shallot farmers.

Subsector vision for systemic change

In its second phase of programme implementation, PRISMA aims to achieve a greater systemic change in the shallot sector by optimising opportunities for multiple market actors at every level along the value chain. TSS producers will continue to serve the shallot seed market and build farmer capacity to meet the demand from the industry and markets. Farmers will be able to purchase TSS seedlings from the nurseries and will have a greater range of downstream options in selling their harvest.

18. SOIL TREATMENT

Soil Treatment Sector Summary

Scope of understanding the soil treatment sector includes 4 main pillars (1) organic fertilizers (2) inorganic fertilizers (3) soil amendment (4) specialty fertilizer. Fertilizer is the important thing on cultivation cross of crops. 50% of yield is depend on the fertilizing practice in theory (IPNI, Agronomy Journal, FAO). According to the FAO's global outlook, Agriculture continues to dominate the fertilizer market. Record high raw material costs pushed fertilizer prices upwards during 2008 and parts of 2009. The fertilizer market in Indonesia is heavily subsidized by the government. Government efforts to improve agricultural development and food security the government distributes subsidized fertilizer to farmers. However, not all cultivated land can be fulfilled by subsidized fertilizers. Therefore, there is still a big opportunity for fertilizer commercial to reach more farmers who do not get subsidized fertilizers, especially for staple food, estate crops, and horticulture crops. Another issue is farmers have limited knowledge on technical applications (proper time, proper doses, proper sequence, proper methods to apply, types of fertilizers along with their benefits, etc.) and cost-benefit calculation (business mindset). This might be due to by limited public and private sector providing extension services to farmers.

Quick facts:

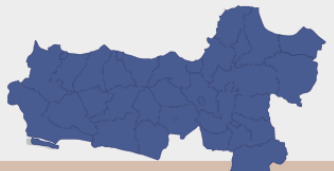
Total Harvested Area	Total Farmers HH	Potential Demand of Fertilizer	Subsidize Fertilizer Allocation from Government	Subsidize Fertilizer Realization from Government	Shortage demand vs realization
44,999,126 Ha	31,044,178	35,026,216 Ton	9,550,000 Ton	9,270,007 Ton	25,756,209 Ton

Fact Source: Statistik Pertanian 2018

East Java

- Total Harvested Area 2017 (Ha) : 4,627,065
- Total Farmers HH 2017 : 4,399,410
- Potential Demand of Fertiliser 2017 (ton) : 4,392,140
- Subsidize Fertiliser Allocation from Government 2017 : 2,758,202
- Subsidize Fertiliser Realization from Government 2017 : 2,698,425
- Shortage demand vs realisation 2017 : 1,693,715

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	44,427
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	92,411,257,040



Central Java

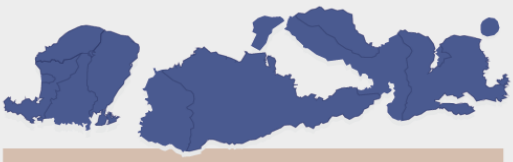
- Total Harvested Area 2017 (Ha) : 3,207,926
- Total Farmers HH 2017 : 3,632,616
- Potential Demand of Fertiliser 2017 (ton) : 3,176,393
- Subsidize Fertiliser Allocation from Government 2017 : 1,784,159
- Subsidize Fertiliser Realization from Government 2017 : 1,697,175
- Shortage demand vs realisation 2017 : 1,479,219

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	24,955
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	3,576,158,040

NTT

- Total Harvested Area 2017 (Ha) : 1,158,668
- Total Farmers HH 2017 : 1,220,456
- Potential Demand of Fertiliser 2017 (ton) : 862,320
- Subsidize Fertiliser Allocation from Government 2017 :47,683
- Subsidize Fertiliser Realization from Government 2017 : 45,589
- Shortage demand vs realisation 2017 : 816,731

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	5,912
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	30,861,663,482



NTB

- Total Harvested Area 2017 (Ha) : 1,046,767
- Total Farmers HH 2017 : 692,303
- Potential Demand of Fertiliser 2017 (ton) : 996,622
- Subsidize Fertiliser Allocation from Government 2017 : 118,736
- Subsidize Fertiliser Realization from Government 2017 : 259,659
- Shortage demand vs realisation 2017 : 736,963

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	-
Cumulative Outreach Projected to Dec 2023 (HHs)	22,928
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023 (IDR)	109,949,144,228

Soil Treatment OVERALL

Indicator	Total
Cumulative Outreach Actual to Y19S1	-
Cumulative Outreach Projected to Dec 2023	98,221
Total NAIC up to Y19S1 (IDR)	-
Total NAIC to Y19S1 (%)	0.00%
Total projected NAIC to Dec 2023	236,798,222,790

Value For Money (VFM)	Soil Treatment Overall
Investment Leverage Partner	0.33
Investment Leverage Sector	-
Investment Per HH:	-
Social Return:	-

18.1 Soil treatment East Java

The East Java fertiliser market is sophisticated, with large numbers of market actors and farmers who are far more informed and have better access to market information than provinces such as NTT and NTB.

East Java's high consumption of fertiliser is due to increased agricultural activity and its large harvest area driving overall demand; potential fertiliser demand here is 4.1 M MTs. However, actual demand is less than potential demand, as farmers are largely unaware of high quality fertiliser (which contains macro and micro nutrients) and correct dosages, and consequently tend to buy more or demand less.

Challenges and constraints

To address these market conditions, PRISMA is prioritising the following constraints:

- **Limited farmer knowledge of good fertiliser practice**. Farmers rarely adhere to the government's recommended ratio of fertiliser per hectare, resulting in the risk of potential low productivity and/or higher cost.
- **Limited farmer knowledge of the benefit of high quality commercial fertilisers** which can produce better yields but are relatively more expensive. Farmers rarely use them because of low confidence and limited knowledge of business calculation.

Intervention areas

To address these challenges and constraints, PRISMA is collaborating with PT Pupuk Kalimantan Timur to:

- promote high quality commercial fertiliser use, and
- introduce good fertiliser practice.

Progress and achievement up to December 2018

In its first phase, PRISMA partnered with private sector agri-input companies, supporting them to promote high quality commercial fertiliser use and good fertiliser practice. These partnerships have provided access to new markets for PT Behn Meyer Chemicals and PT Hextar.

PRISMA facilitated Behn Meyer to develop a strategic plan, improve its extension service agents sales and promotional skills, and create smaller fertiliser packages appropriate and affordable for rural smallholder farming households. The business model introduced in East Java went well; the company's incremental

number of sales increased significantly and it continued to utilise the model. Up to 2018, the intervention covered the districts of Banyuwangi, Blitar, Jember, Magetan, Malang, Ngawi and Pasuruan.

The partnership with PT Hextar began with the provision of support to East Java's coffee-growing regions, then expanded to include other crops within the farming areas of Malang, Jember and Banyuwangi. PRISMA facilitated Hextar to develop a robust marketing strategy, identify locations with the greatest potential for penetration, increase the knowledge of their extension agents, and provide ideas for brand awareness raising.

Subsector vision for systemic change

In its second phase of programme implementation, PRISMA aims to achieve a greater systemic change in the East Java fertiliser sector, by 2023 achieving increased revenues from non-subsidised fertiliser through better and affordable product offerings, and the regular availability and provision of embedded extension information, driven by a growing unmet demand for fertiliser.

18.2 Soil treatment NTB

The government has made significant strides in the push for domestic maize cultivation in NTB, especially in the previously under-utilised dryland areas of the province. This has resulted in farmers who have traditionally planted coffee and coconut now either expanding cultivation into dryland areas or reducing cultivation of other crops (such as maize, a large consumer of fertiliser). This has created an opportunity for the use and supply of commercial fertiliser, despite awareness and acceptance among farmers being low. There is an estimated total demand for 0.69 M MT of fertiliser, only 38% of which is covered by subsidised fertiliser, meaning that 62% of demand (equivalent to 0.43 M MTs) is yet to be realised.

Challenges and constraints

PRISMA has decided to prioritise the following constraints:

- **Unstable supply of subsidised fertiliser**. Demand for fertiliser is significantly higher than supply, creating a risk for farmers and resulting in low productivity.
- **Farmers' knowledge of good fertiliser practice is limited**. Farmers rarely adhere to the government's recommended ratio per hectare, resulting in a risk to them, as this also results in low productivity and/or higher cost.

Intervention areas

To address these challenges and constraints, PRISMA is collaborating with PT Pupuk Kalimantan Timur to:

- promote the use of high quality commercial fertiliser (containing macro and micro nutrients), and
- introduce good fertiliser practice.

Progress and achievement up to December 2018

In Phase 1, PRISMA partnered with private sector agri-input companies and facilitated them to promote high quality commercial fertiliser and adopt good fertiliser practice. These partners have experienced increased sales of up to 160% and expanded their business into nearby districts. Evidence of systemic change is apparent in the sector, as following the end of the first phase, PRISMA's partners (PT Behn Meyer, PT Pupuk Kalimantan Timur and CV Saprotan Utama) continued to run the business model independently of the program.

Systemic change is also evident in the behaviour of partner PT Pupuk Kalimantan Timur, which after experiencing significant sales increases, at the end of 2018 started to test out the business models in other areas, such as Sulawesi.

Subsector vision for systemic change

In its second phase of programme implementation, PRISMA aims to achieve a greater systemic change in the NTB fertiliser sector. By 2023, it will have achieved increased revenues from non-subsidised fertiliser through better and affordable product offerings and the regular availability and provision of embedded extension information, driven by the growing unmet demand for fertiliser.

18.3 Soil treatment NTT

The three main islands of NTT are Flores, Timor and Sumba. Flores Island leads in term of NTT's production (especially in the vegetable sector), supplying 28% of the province's total. It is characterised by deep, rich volcanic soils and high rainfall, which is more conducive to agriculture than other districts. Timor Island has shallow soils, a long dry season and variable rainfall, poor physical and social infrastructure, isolation and low literacy levels. It is one of Indonesia's driest regions, with an average of eight rain-free months each year. Annual rainfall can be as low as 350 mm, and many districts experience high evaporation, poor soil filtration, and a groundwater deficit, making farmers dependent on rainwater-fed irrigation and able to rely on crop growth for just 60-100 days each year. Sumba Island lies between Flores and Timor in term of climatic conditions.

Challenges and constraints

PRISMA has identified a number major challenges and constraints to address in Phase 2:

- **Fertiliser companies/producers face a number of constraints**, including unstable prices of raw materials, competition from government subsidised products and imported brands, and difficulty getting their products "endorsed" or promoted by government extension agents.
- **Distributors encounter a high volume and frequency of returns from retailers**, despite incentives provided by their sales teams.
- **Retailers face competition** from subsidised products, stock availability and delays (especially with subsidised products), limited support from fertiliser companies (including a lack of promotional materials, extension services and product knowledge), and difficulty managing an unwieldly subsidised fertiliser allocation process.
- **Consumers (farmers/farmer groups) face several constraints**: subsidies are not always available (resulting in their limited access to fertiliser), commercial fertilisers being (perceived as) expensive and providing poor value for money, and lack of knowledge and GAP related to fertiliser and crop. In addition, fertiliser promotion by extension agents largely targets food crop cultivation to the detriment of other crops, including vegetables.
- **Supporting functions encounter several constraints**: delays in delivery of fertiliser (due to a long value chain and weak transportation services), and government extension workers mostly focusing on food crops and therefore having limited knowledge on GAP and good fertiliser practices for other crops. As for private extension workers, the anticipated geographical coverage area is very large, and often remote and inaccessible. There is also a limited number of workers available to service such coverage area, resulting in a decline in promotional activities and in the dissemination of information on products and GAP.

Intervention areas

To address these challenges and constraints, PRISMA is collaborating with PT Pupuk Kalimantan Timur to:

- promote the practice of high quality commercial fertiliser use, and
- introduce good fertiliser practice.

Progress and achievement up to December 2018

In its first phase, PRISMA partnered with private sector companies, supporting them to promote high quality commercial fertiliser and good fertiliser practice. In NTT, PRISMA faciliated PT Behn Meyer Chemicals to develop a strategic plan, improve its extension service agents' sales and promotional skills, and create smaller fertiliser packages for rural farmers. Until 2018, PRISMA's Soil Treatment (at the time, named 'Fertiliser') intervention covered only a small area of NTT in TTU district, which Phase 2 plans to expand.

Subsector vision for systemic change

In its second phase of programme implementation, PRISMA aims to achieve a greater systemic change in the NTT fertiliser sector. By 2023, the sector in will have increased its revenue from non-subsidised fertiliser through better and affordable product offerings, and the regular availability and provision of embedded extension information, driven by growing unmet demand for fertiliser, and the fertiliser producers increasingly seeing farmers as their main customers.

19. VEGETABLE

Vegetable Sector Summary

Global vegetable production between 2004 and 2014 has increased by 25%, on average, and there is no sign of change in this trend. These production volumes are driven predominately by China and India, with high population numbers and large land sizes allocated to vegetable farmers. Despite these encouraging statistics, the yield (tonnes per hectare) or productivity figures do not quite paint the same picture. Indonesia vegetable production has increased by 1.38 percent per year since 2012 to 7.6 million tonnes in 2016 and has exceeded domestic demand. Despite being the largest vegetable producer in Southeast Asia, Indonesia is a net importer of vegetables although the quantity is below 5% of domestic production. The imports are typically for specialty vegetables such as paprika and the trend fluctuates. Within Indonesia, four provinces dominate vegetable production, with 65% of the market and West Java leading the pack.

Quick facts:

Total production	Total harvested area	National Productivity	Demand
12,481,893MT	971,100	10,700	3.5%

Facts Source: Statistik Pertanian 2018, Sensus Pertanian 2013, Outlook TPHORTI 2017

East Java

- Total Provincial Production (Ton) : 1,647,028
- Total Provincial Population : 181,895
- Total farm households in the sector 625,950

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	9,786
Cumulative Outreach Projected to Dec 2023 (HHs)	25,001
Total NAIC up to Y19S1 (IDR)	114,655,689,440
Total NAIC to Y19S1 (%)	58.97%
Total projected NAIC to Dec 2023 (IDR)	155,431,664,797

NTB

- Total Provincial Production (MT) : 251,128
- Total Provincial Population (Ha) : 8,286
- Total farm households in the sector (HHs) : 58,398

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	5,980
Cumulative Outreach Projected to Dec 2023 (HHs)	5,980
Total NAIC up to Y19S1 (IDR)	69,484,900,000
Total NAIC to Y19S1 (%)	42.36%
Total projected NAIC to Dec 2023 (IDR)	69,484,900,000

NTT

- Total Provincial Production (MT) : 60,032
- Total Provincial Population (Ha) : 2,926
- Total farm households in the sector (HHs) : 92,633

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	2,275
Cumulative Outreach Projected to Dec 2023 (HHs)	2,275
Total NAIC up to Y19S1 (IDR)	34,268,197,568
Total NAIC to Y19S1 (%)	76.28%
Total projected NAIC to Dec 2023 (IDR)	34,910,739,424

PAPUA

- Total Provincial Production (Ton) : 62,804
- Total Provincial Population : 10,318
- Total farm households in the sector : 266,054

Indicator	Total
Cumulative Outreach Actual to Y19S1 (HHs)	3,223
Cumulative Outreach Projected to Dec 2023 (HHs)	29,955
Total NAIC up to Y19S1 (IDR)	2,086,100,453
Total NAIC to Y19S1 (%)	12.92%
Total projected NAIC to Dec 2023 (IDR)	34,910,739,424

19.1 Vegetable Papua and West Papua

The quantity of vegetables produced by smallholder farming households in Papua and West Papua is insufficient to meet local market demand. The total population of the two provinces is 4 M, of which 35% (1.4 M) work in the agriculture sector; 31% and 27% of the total population in Papua and West Papua respectively are living in poverty. There are 47,940 horticulture farming households in West Papua and 266,054 farming households in Papua (Sensus Pertanian, 2013). The opportunity for vegetable farming is wide open, considering Papua and West Papua still import large quantities of certain vegetables (including chili, tomato and shallot) from Sulawesi and Java, due to a lower level of productivity resulting from poor agricultural practices and low access to quality seed. Given the project's understanding of the dynamics at play, the differences in behaviour between indigenous and migrant farmers, and the constraints identified, the intervention area PRISMA has chosen in both provinces is the promotion of good quality seed and GAP in both highlands and lowlands among indigenous and migrant farmers.

Challenges and constraints

Indigenous farmers and migrant farmers make up to 50% of the population in both provinces and face differing constraints.

For **indigenous farmers**, the main constraints are:

- **Limited access to GAP knowledge.** Due to the scattered locations of indigenous farmers, the business case for private extension services to provide GAP knowledge to them is not yet apparent. As a result, they rely heavily on public extension services; however, the information these services provide is not always effective. The number of government officers providing them is low compared to the population served, preventing them providing regular capacity building to farmers, especially in more remote areas.
- **Low incentive to obtain advanced skills in vegetable farming**. Many indigenous Papuans are supported by government programs and subsidies which allow them to obtain an income quickly, easily and regularly. They expect these programs to continue and therefore lack motivation to obtain skills to provide for themselves through farming.
- **Limited information on market access of higher value vegetables**. Indigenous farmers usually cultivate crops which have low value in the market, such as cassava. There is a demand for higher value vegetables; however, these farmers have no access to information regarding what types of higher value vegetable are currently in demand, or how to connect with end markets.

For **migrant farmers**, the main constraints are:

- **Limited access to high quality seed and other agri-input products**. Migrant farmers have relatively better knowledge of GAP than indigenous farmers; however, they sometimes face difficulties obtaining high quality seed and other agri-input products. This is due to the long transportation time of products from other islands, such as Java and Sulawesi.
- **Limited access to GAP knowledge.** Even though migrant farmers have more advanced knowledge in GAP, they still lack capacity building to cultivate crops requiring more advanced knowledge, and pest and disease management. For example, they might no longer need assistance in cultivating chilli and tomatoes, but need GAP training in cultivating shallot, a crop with the potential to provide them with higher income.
- **Information asymmetry of integrated farming**. Migrant farmers usually suffer from oversupply in the market, mainly because they cultivate and harvest the same types of crops at the same time. They also compete with inter-island vegetable imports. To mitigate this issue, integrated information, and a farm planning system involving farmers, collectors and inter-island traders are essential.

Intervention areas

PRISMA's vegetable subsector is currently restrategising to better address the challenges and constraints facing vegetable farming households in Papua and West Papua. In Phase 2, the project will conduct market research to assess potential opportunities for the seed market in Papua and West Papua, and to improve marketing and sales strategy (this includes identifying the most effective distribution channels, and capacity building to assist partners in pilot implementation of the improved strategy). Potential areas of intervention include:

- promoting good quality seed and GAP (scale up);
- improving the quality of agricultural information for farmers, and
- improving alternative market options.

Progress and achievement up to December 2018

By the end of the first phase, PRISMA had benefited 5,968 farmers (34% at USD 2 PPP and 61% at USD 2.5 PPP) (the PPP calculation is mixed between migrants and indigenous farmers). The number of migrant beneficiaries was higher than indigenous Papuan farmers; the former planted more high value crops and achieved higher income increase. Another market improvement was implied by farmers in Sulawesi (Palu) claiming that the supply of vegetable to Papua and West Papua has decreased over the past two years.

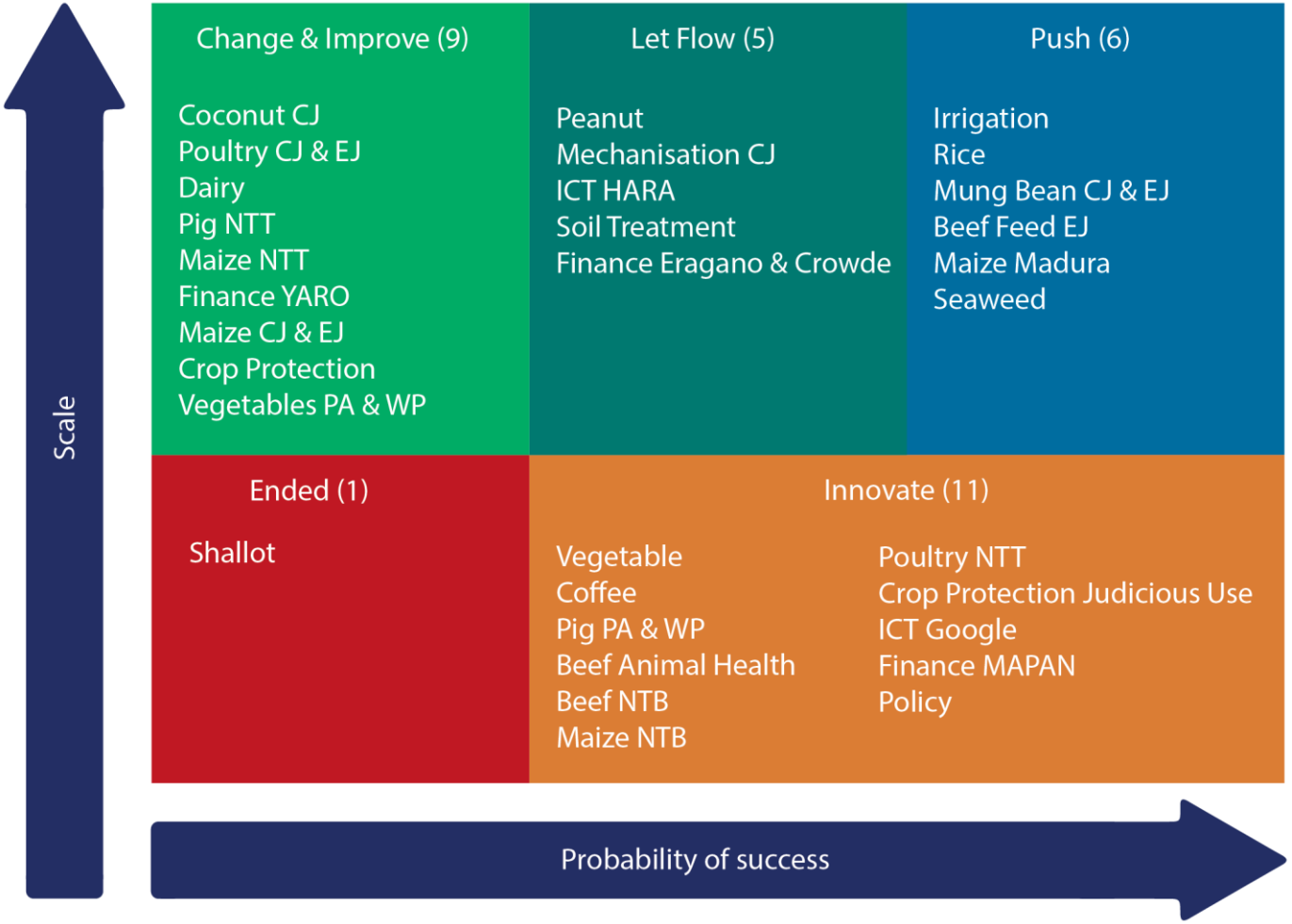
PT EWINDO sales have increased by an average of 16% a year during its partnership with PRISMA (2016-18). The involvement of female farmers has also increased to approximately 43% of total access. This is an indication of significant systemic change in regard to women's economic empowerment, as initially EWINDO tended to invite only male farmers to capacity building events, before PRISMA showcased the company the business case of involving more women.

As a result of this success, EWINDO's teams in Papua and West Papua have become more confident in approaching indigenous farmers as potential customers. There is evidence of systemic change, as the company has adopted the business model and continues to work in Papua and West Papua, even after the partnership with PRISMA finished in October 2018. As of December 2018, EWINDO vegetable seed sales in Papua and West Papua totalled IDR 11.7 bn, equivalent to approximately 70% of the market share in Papua and West Papua, with Sorong and Jayapura dealers recording the highest sales.

Subsector vision for systemic change

By the end of the program, PRISMA expects to see men and women farmers, both indigenous and migrant, in both lowland and highland Papua, benefiting from using high quality input seed along with technical knowledge, having access to market information both from public or private extension services, allowing them to integrate their planting schedule with inter-island imports, as well as synchronising their harvesting schedule with other farmers. Seed producers will also benefit from increased sales in new areas of lowland and highland Papua. This will be achieved by creating economies of scale in the vegetable seed market, by showcasing the market potential for new potential partners and facilitating their market entry. A stronger collaboration with local government and off-takers will be an additional focus of PRISMA's work in Papua in Phase 2.

Annex 2 – PRISMA QMT results July 2019



Annex 3 – PRISMA portfolio development plan

Subsector	Actual Cumulative			Actual 19S1			Plan 2019S2			Plan 2020S1		
	ICN	IP	Intervention with Contract	ICN	IP	Intervention with Contract	ICN	IP	Intervention with Contract	ICN	IP	Intervention with Contract
Beef-CJ		1	1		1	1		1			3	1
Beef-EJ		1	1		1	1		1			2	1
Beef-NTB								1	1		3	
Beef-NTT											1	
Coconut-CJ							1	1	1			
Crop Protection-CJ								1	1			
Crop Protection-EJ							1	3	2			1
Crop Protection-NTB								2	2			
Crop Protection-NTT								1	1			
Dairy-CJ							1	1	1			
Dairy-EJ							1	1	1			
ICT-EJ		1	1		1	1						
ICT-NTT								1	1			
Finance-EJ		1			1			1	1			
Finance-CJ	1		1	1		1						
Finance-NTB		1	1		1	1						
Finance-NTT			1			1						
Irrigation-EJ		2			2							
Maize-EJ		1	1		1	1						
Maize-NTT		1	2		1	2						
Maize-NTB			1			1						
Mechanisation-CJ												
Mechanisation-EJ	1			1			1	2	1			1
Mung bean-CJ		1	1		1	1						
Mung bean-EJ		1	1		1	1						

Peanut-EJ		2	1		2	1						
Pig-NTT							2	2	2			
Poultry-CJ							1	1	1			
Poultry-EJ							1	1	1			
Poultry-NTT							1	1	1			
Rice-EJ	1			1				2	2			
Rice-NTB											1	1
Seaweed-NTT		1			1							
Seaweed-Papua												
Soil Treatment-CJ		1			1			1	1		1	1
Soil Treatment-EJ		1	1		1	1		1	1		2	1
Soil Treatment-NTB		1	1		1	1		1	1		1	1
Soil Treatment-NTT			1			1		1	1			
Vegetable-EJ							1				1	1
Vegetable-Papua							1	1	1			
Vegetable-West Papua							1	1	1			
Total	3	17	16	3	17	16	13	30	26	0	15	9

Annex 4 – PRISMA projections up to Y21S1

	Projection 2019 S2 (Jul-Dec 2019) – incremental overlap unadjusted								Projection 2020 S1 (Jan-Jun 2020) – incremental overlap unadjusted							
Subsector	Semester access (farm HHs) Dec 2019	Semester use (farm HHs) Dec 2019	Semester outreach (farm HHs) Dec 2019	Semester income (IDR) Dec 2019	Semester outreach (farm HHs <USD2.00 PPP) Dec 2019	Semester income increase (<USD2.00 PPP) Dec 2019	Semester outreach (farm HH <USD2.50 PPP) Dec 2019	Semester income increase (<USD2.50 PPP) Dec 2019	Semester Access (farm HHs) Jun 2020	Semester use (farm HHs) June 2019	Semester outreach (farm HHs) June 2020	Semester income (IDR) June 2020	Semester outreach (farm HHs<USD2.00 PPP) June 2020	Semester income increase (<USD2.00 PPP) June 2020	Semester outreach (farm HHs <USD2.50 PPP) June 2020	Semester income increase (<USD2.50 PPP) June 2020
Beef NTB	-	1,011	708	5,371,944,828	191	1,450,425,104	439	3,330,605,793	-	-	-	-	-	-	-	-
Crop Protection CJ	2,177	1,110	500	2,563,020,539	185	948,317,599	325	1,665,963,350					-	-	-	-
Crop Protection EJ	6,300	7,182	12,549	72,422,934,916	3,354	18,726,390,428	6,178	37,387,022,750					-	-	-	-
Crop Protection NTB	-	-	6,226	19,129,517,914	1,202	3,691,996,957	2,949	9,061,652,636					-	-	-	-
Crop Protection NTT	-	-	1,275	5,255,783,985	455	1,876,314,883	810	3,339,875,705					-	-	-	-
Dairy CJ	600				-	-	-	-		420	252	520,803,360	93	192,697,243	164	125,253,208
Dairy EJ	1,000				-	-	-	-		700	420	1,102,500,000	146	382,770,257	271	246,718,914
Finance EJ	-	-	25	75,000,000	7	19,500,000	13	37,500,000	-	-	-	-	-	-	-	-
ICT EJ	-	-	-	-	-	-	-	-	19,500	4,875	2,925	18,473,568,750	1,016	6,413,725,771	1,885	4,134,039,748
ICT NTT	-	-	-	-	-	-	-	-	200	200	150	465,000,000	61	187,888,301	100	124,683,275
Finance CJ					-	-	-	-	1,600	800	400	1,060,000,000	148	392,200,000	260	254,930,000
Finance NTB					-	-	-	-	9,879	6,915	3,693	11,448,300,000	1,290	3,998,933,888	2,376	2,573,336,298
Irrigation TIRTA EJ	500	696	696	4,150,552,368	257	1,524,389,485	487	2,894,071,766	-	-	-	-	-	-	-	-
Irrigation EJ	452	452	452	2,274,088,160	157	789,526,812	292	1,465,789,336	4,642	4,642	4,642	23,576,829,732	1,612	8,185,495,857	2,992	5,276,054,268
Maize EJ	-	-	-	-	-	-	-	-	313	313	313	647,586,984	135	278,462,403	238	211,631,426
Maize NTB	-	-	-	-	-	-	-	-	9,290	5,000	3,500	10,850,000,000	945	2,929,500,000	2,100	1,757,700,000
Maize NTT	-	-	4,299	8,751,315,668	1,657	3,252,878,698	2,758	5,511,151,318	10,400	8,400	7,308	10,831,654,512	2,953	4,376,647,659	4,850	2,904,357,335
Mechanisation EJ					-	-	-	-	3,857	3,857	2,700	540,000,000	937	187,479,310	1,740	120,841,917
Mung bean CJ	-	-	-	-	-	-	-	-	1,157	1,157	1,041	2,713,887,000	229	597,055,140	552	316,439,224
Mung bean EJ	6,006	5,099	4,782	2,618,269,196	1,052	576,019,223	2,534	1,387,682,674	1,704	2,275	2,047	3,602,720,000	450	792,598,400	1,085	420,077,152
Mung bean NTT	400	400	400	44,005,600	180	19,802,520	332	36,524,648	-	-	-	-	-	-	-	-
Pig NTT	33,530	16,765	16,765	18,806,624,935	6,774	7,599,021,082	11,125	12,480,136,244	-	-	-	-	-	-	-	-
Poultry CJ					-	-	-	-	2,000	1,000	500	90,000,000	175	31,437,336	322	20,230,101
Poultry EJ					-	-	-	-	2,000	1,000	500	90,000,000	174	31,246,552	322	20,140,320
Poultry NTT					-	-	-	-	2,000	1,000	500	90,000,000	175	31,437,336	322	20,230,101
Rice-EJ	-	-	3,519	14,692,576,500	1,267	5,289,327,540	1,091	4,554,698,715	-	-	-	-	-	-	-	-
Seaweed NTT	200	200	200	40,109,327	86	17,247,011	136	27,274,342	-	-	-	-	-	-	-	-
Seaweed West Papua	-	200	200	4,435,974,798	68	1,508,231,431	180	3,992,377,318	-	-	-	-	-	-	-	-
Shallot NTB	840	700	700	857,668,000	294	360,220,560	476	583,214,240	1,200	1,000	1,000	1,225,240,000	420	514,600,800	680	349,928,544
Soil Treatment EJ	-	-	-	-	-	-	-	-	4,357	822	1,319	16,025,850,000	480	5,835,011,985	922	4,076,922,874
Soil Treatment NTB	71	1,054	1,433	7,810,346,000	569	3,073,877,252	1,043	5,685,150,853	3,007	-	-	-	-	-	-	-
Soil Treatment NTT	-	-	-	-	-	-	-	-	1,291	283	365	4,432,320,000	174	2,115,546,336	267	1,545,195,044
Grand Total	**52,076**	**34,870**	**54,729**	**169,299,732,734**	**17,755**	**50,723,486,585**	**31,167**	**93,440,691,690**	**90,100**	**52,059**	**33,575**	**107,786,260,338**	**11,611**	**37,474,734,573**	**21,446**	**24,498,709,749**

Annex 5 – PRISMA semester outreach breakdown (July 2019)

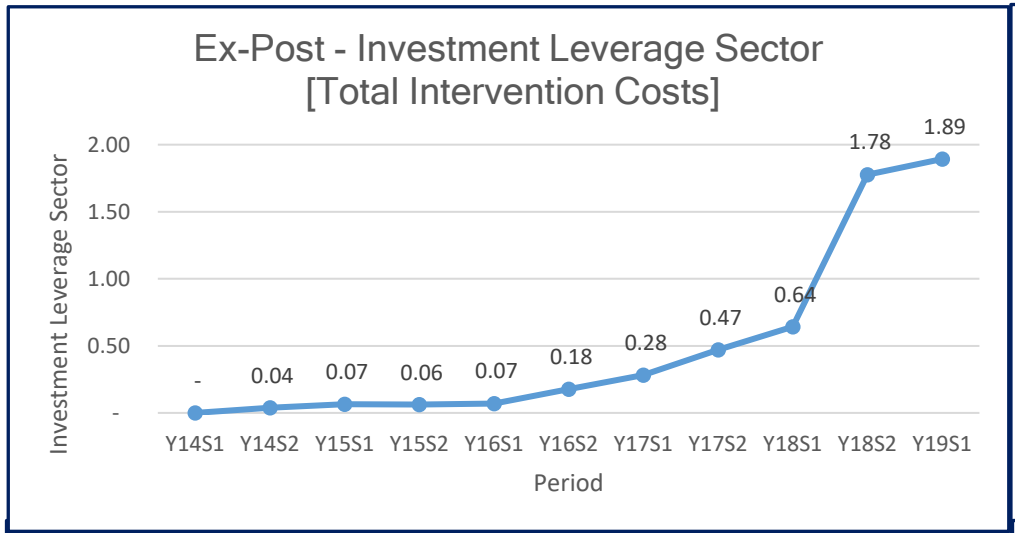
No	Intervention Code	Pipeline Intervention Name	Cumulative Actual Outreach (HH)	Actual Outreach Y19S1 (HH)	Actual NAIC Y19S1 (IDR)
1	11GC	Institutional Strengthening for BRI	3,903	-	-
2	13PE	Institutional Strengthening – CU Sawiran	3	-	-
3	1B1A	Irrigation Provision Through Intervillage Agreement	162	-	-
4	1B2A	Irrigation provision through the promotion of irrigation consulting in Besah	320	-	-
5	1BFA	Beef Feed – WU	834	-	-
6	1BFB	Beef Feed – PKM	1,212	-	-
7	1BFC	Beef – Nutrifeed	8,534	887	4,746,842,225
8	1BFD	Beef – Japfa	328	-	-
9	1C1A	Expansion of Irrigation Though Efficiency Irrigations and Integrated Irrigation business sectors	563	-	-
10	1CAA	Access to GAP and Fertiliser	643	-	-
11	1CTA	Organic Certification, Coconut Sugar	431	-	-
12	1CZA	Cassava East Java	483	-	-
13	1DZA	Dairy East Java	2,571	-	-
14	1FHA	Fish Cage Farming	6	-	-
15	1G1A	Irrigation Expansion Going Extra Mile	36	-	-
16	1G2A	Technical Improvement for better irrigation access (Gayam 2)	914	-	-
17	1GIA	M4P Maize Pamekasan	1,950	-	-
18	1GIC	Promoting Small Vegetable Seed Package to Rural Area of Pamekasan – PPC	499	-	-
19	1ITA	Vegetable ICT – EWINDO (SIPINDO)	6,461	-	-
20	1ITB	ICT – NASA	25,835	-	-
21	1K1A	Kliteh, Malo	184	-	-
22	1K1B	Upgrading Irrigation System for Expansion in Tinawun	81	-	-
23	1K2A	Kemiri, Malo	286	-	-
24	1K8A	Expansion Irrigation through Efficiency Irrigations and Co-Funding Infrastructures	799	-	-
25	1KZA	Sheep East Java	6	-	-
26	1L1A	Surface Irrigation to Remote Areas (Leran 1)	244	-	-
27	1L2A	Irrigation Expansion (Leran 2)	89	-	-
28	1L3A	Irrigation Expansion and Productivity (Leran 3)	363	-	-
29	1MEA	Maize – AHSTI	14,517	-	-
30	1MEB	Expansion of Hybrid Market	5,106	-	-
31	1MEC	Maize – Syngenta	2,502	-	-
32	1MED	Maize – DuPont	13,474	-	-
33	1MEE	Maize – BISI	10,004	-	-

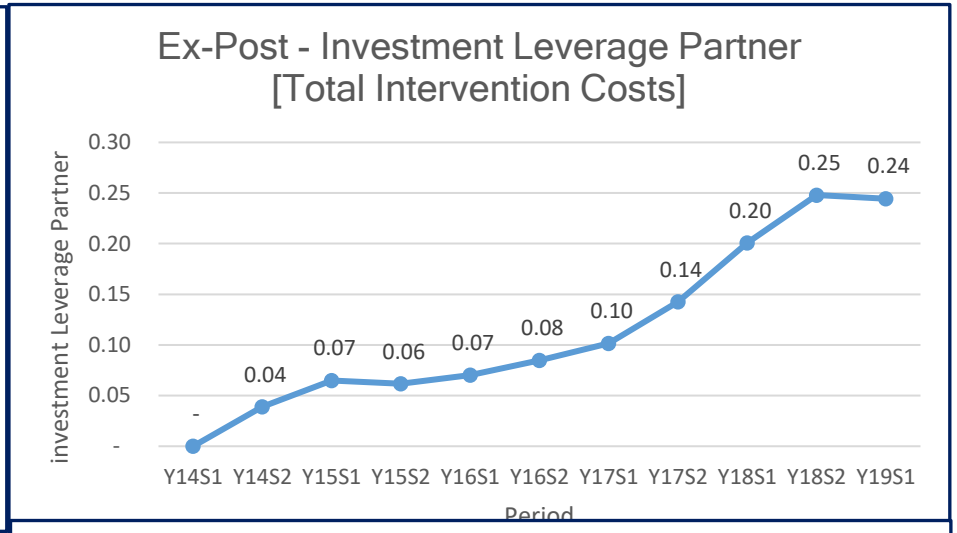
No	Intervention Code	Pipeline Intervention Name	Cumulative Actual Outreach (HH)	Actual Outreach Y19S1 (HH)	Actual NAIC Y19S1 (IDR)
34	1MND	Promoting Certified Mung Bean Seed	503	-	-
35	1MOA	Mango EJ – Syngenta	5,580	-	-
36	1MOB	Mango EJ Scale-up – Syngenta	1,094	-	-
37	1MOD	Pozole EJ – Rainbow	27	-	-
38	1P1A	Pilanggede	703	-	-
39	1P2A	Irrigation Management Improvement to GHIPPA Kanor	112	-	-
40	1P5A	Irrigation Provision in Padangan District Through Intervillage Agreement	346	-	-
41	1PTA	Good Quality Seed	101	-	-
42	1PTC	Peanut EJ – Syngenta	790	790	1,791,451,304
43	1PTD	Promoting Quality Input to Peanut Farmers	173	173	460,110,293
44	1R1A	Development of Irrigation Consulting Service	167	-	-
45	1R1B	Integrating Productivity Enhancement with Irrigation business	5,844	-	-
46	1REA	Rice EJ – FMC	3,560	-	-
47	1SNA	Developing Commercial Market	9,639	-	-
48	1SNB	Certification and Nurseries	4,035	-	-
49	1STA	Shallots – SPILT	1,540	-	-
50	1STB	Social Marketing – CropLife	490	-	-
51	1STC	IPDM – Nufarm	771	-	-
52	1SZA	Sugarcane East Java	406	-	-
53	1T1A	Testing the Role of Village-Owned Enterprises in the Development of Irrigation Provision in Tejo	181	-	-
54	1VEA	Rainbow – Vegetable EJ	878	-	-
55	1VEB	Agrosid – Soil Treatment GAP	2,447	1,020	5,661,014,280
56	1VED	Danken – Pest and Disease Management	1,016	593	449,745,480
57	1VEE	Vegetable EJ Agricon	520	520	2,876,629,318
58	2BFA	Commercial Feed	645	-	-
59	2BZA	Cattle ARISA	2,667	-	-
60	2CWA	Pest Control and GAP Services	1,387	-	-
61	2GIB	Promoting Small Package Quality Vegetable Seed for Rural Home Gardens in Sumbawa	1,077	-	-
62	2ITA	Vegetable ICT – EWINDO (SIPINDO)	1,566	-	-
63	2ITB	ICT – NASA	7,904	-	-
64	2MEB	GAP and GHP – YARO	3,367	-	-
65	2MEC	Promoting Quality Maize Hybrid Seed and Good Cultivation Practices	3,231	3,231	9,767,556,735
66	2MOA	Mango NTB – Syngenta	1,372	-	-
67	2MOB	Mango NTB Scale-Up – Syngenta	896	-	-
68	2MZA	Maize NTB	2,735	-	-
69	2SNA	BASF Soy Doctor Program	1,609	-	-

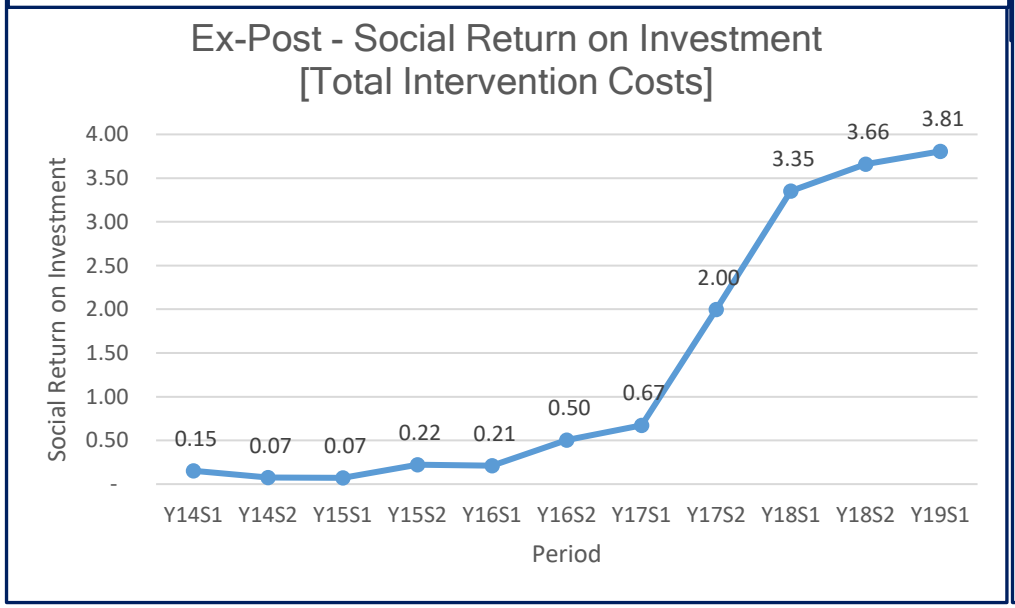
No	Intervention Code	Pipeline Intervention Name	Cumulative Actual Outreach (HH)	Actual Outreach Y19S1 (HH)	Actual NAIC Y19S1 (IDR)
70	2SNC	ACCESS	1,492	-	-
71	2STA	Shallot – EWINDO	8,028	-	-
72	2STB	Social Marketing CropLife	385	-	-
73	2STC	IPDM – Nufarm	1,532	-	-
74	2VEA	Vegetable NTB – Rainbow	4,414	-	-
75	3BFA	Beef – lamtoro	65	-	-
76	3CEA	Coffee GAP	4,598	-	-
77	3CEB	Decentralised Processing	2,212	-	-
78	3CEC	Improving Market Access and Increasing the Productivity of Arabica Coffee in Flores	3,126	-	-
79	3CTB	Better Value Market for CCO Farmers	91	-	-
80	3CWA	Cashew – Peduli Kasih	423	-	-
81	3CWB	Quality Inputs and Tools	5,412	-	-
82	3CWC	Cashew GAP – Government ES	443	443	278,468,078
83	3GIA	Promoting small package quality vegetable seed for rural Home Gardens in Kupang	62	-	-
84	3GIB	Promoting small package quality vegetable seed for rural Home Gardens in TTS	22	-	-
85	3ITA	Vegetable ICT – EWINDO (SIPINDO)	1,759	-	-
86	3ITB	ICT – NASA	4,571	-	-
87	3MEA	Maize – YMTM	7,298	-	-
88	3MEB	Maize Nurseries	10,342	-	-
89	3MEC	Maize Storing	141	-	-
90	3MED	Stimulating Market of OPV Seed	4,081	-	-
91	3MEE	Maize OPV Nurseries	6,668	-	-
92	3MEF	Promoting Hybrid Maize Cultivation	1,071	-	-
93	3PGA	Pig Rearing	1,118	-	-
94	3PGB	Decentralised Feed for Pig	54,555	2,476	24,666,847,002
95	3PGC	Promoting Improved Feed and Good Rearing Practices in Timor	49,312	(433)	73,647,709,362
96	3PTA	Good Quality Peanut Seeds	308	207	149,232,701
97	3PTB	Promoting High Quality Peanut Seeds	271	271	1,145,500,315
98	3SDA	Seaweed – UD Alga	630	-	-
99	3SDB	Seaweed – RKN	30	-	-
100	3SDD	Seaweed – Mazu	850	-	-
101	3VEA	Vegetable NTT – Sumber Tani and Sahabat Tani	516	-	-
102	4COA	Cocoa – YPPWP	298	-	-
103	4VEA	Promotion of Good Quality Seed and GAP Provision	2,397	132	(448,137,512)
104	4VEB	Vegetable – YBTS	111	-	-
105	4VEC	EWINDO Scale-up Papua	1,146	53	146,829,804
106	5VEB	Highland Vegetables	176	-	-

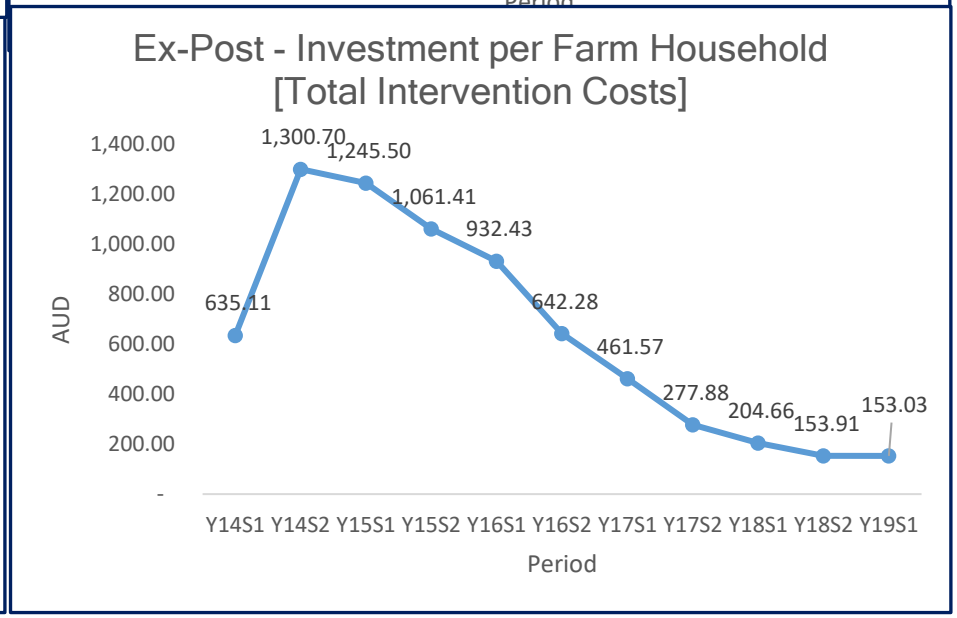
No	Intervention Code	Pipeline Intervention Name	Cumulative Actual Outreach (HH)	Actual Outreach Y19S1 (HH)	Actual NAIC Y19S1 (IDR)
107	5VEC	Promotion of Good Quality Seed and GAP Provision	2,839	235	3,061,917,568
108	5VED	EWINDO Scale-up West Papua	124	124	357,521,762
109	5VEE	Fakfak West Papua – YBTS	84	-	-
Grand Total			**355,723**	**10,722**	**128,759,238,715**

Annex 6 – PRISMA value for money ex-post Y19S1









Annex 7 – PRISMA partner details

PRIVATE SECTOR PARTNER

HARA

Name of partner	:	PT Agri Tekno Karya (HARA)			
Core business	:	HARA is a blockchain-based data exchange for the food and agriculture sector			
Sector	:	ICT	Location	:	East Java
Intervention	:	Improvement of credit disbursement process and proof of concept of input and off-taking business case through digital data exchange			

Partner objectives :	PRISMA facilitation :
• Connect farmers with other players (financial institutions, off-takers and input producers) in the agriculture sector through digital data exchange using Agriculture Application.	• Develop and improve the business model • Prove the business case (piloting, connect with relevant stakeholders and socialisation)

PT BISI International Tbk

Name of partner	:	PT BISI International Tbk			
Core business	:	BISI is Indonesia's largest producer of hybrid seeds for maize, rice, and fruits and vegetables			
Sector	:	Finance	Location	:	NTB, NTT
Intervention	:	Expanding access to agri-input financing for farmers through BISI-YARO			

Partner objectives :	PRISMA facilitation :
• Grow market sales by utilising agri-input financing as one of its promotional tools • Expand maize seed market to NTT • Improve effectiveness of current market database management and analysis	• Improve partner's capacity in managing agri-input financing through YARO and developing credit history for their farmers • Facilitate more engagement with other financing providers to offer more agri-input financing products to farmers • Support promotional activities through YARO distribution channel • Support improvement of market database management and analysis

CORTEVA™ agriscience

Name of partner	:	Corteva Agriscience			
Core business	:	Balanced and diverse seed, crop protection, and digital service solutions			
Sector	:	Maize (existing), Rice, Crop Protection (explorative)	Location	:	CJ, EJ, NTB, NTT
Intervention	:	Promoting better farming practices and technology for increasing the yield			

Partner objectives :	PRISMA facilitation :
• Improve its strategies and inclusive business models • Expand hybrid seed market	• Conduct research (market research, gender study related to business case) • Develop partner's promotional program • Support sales force capacity building • Support business strategy development

CROWDE

Name of partner	:	PT Crowde Membangun Bangsa			
Core business	:	An agri-tech financing platform working through crowdfunding scheme to provide financial services in agricultural sector			
Sector	:	Finance	Location	:	Central Java
Intervention	:	Expanding innovative agri-financing			

Partner objectives :	PRISMA facilitation :
• Increase portfolio by expanding to other areas/commodities • Leverage other business opportunity/financing such as AR financing • Confirm its position as market leader in agri-tech financing industry	• Improve marketing strategy (including setting-up Kiosk agent system) • Improve credit scoring system and collection system • Conduct stakeholders gathering for supporting market actors (insurance, bank, etc) • Speed up technical development of farmers' marketplace • Speed up IOT support for monitoring • Support TONI app (a Kiosk app) improvement and promotion

Name of partner	:	PT East West Indonesia (EWINDO)			
Core business	:	Headquartered in the Netherlands, East West Indonesia focuses its business in horticulture seed with its brand Panah Merah. It is currently developing its mung bean seed business with PRISMA support			
Sector	:	Mung bean	Location	:	CJ, EJ
Intervention	:	Commercialisation of mung bean seed			
Partner objectives : • Develop its business portfolio to include staple crop (mung bean) in addition to horticulture			PRISMA facilitation : Phase 1: business plan and consumer research Phase 2: marketing activities and mung bean consumption mapping through research and mung bean industry FGD		

Name of Partner	:	PT GarudaFood Putra Putri Jaya, Tbk			
Core business	:	GarudaFood is the largest peanut snack manufacturers in Indonesia with three business divisions: food, beverage and distribution. It is also a pe			
Sector	:	Peanut	Location	:	CJ, EJ
Intervention	:	Promoting peanut off-taker			
Partner objectives : • Promote offtakers through direct partnership scheme with farmers group/entity for wet pod and local kernel peanut			PRISMA facilitation: • Provide research on potential partnership mapping, facilitation with stakeholders and pilot partnership event		

KJUB PUSPETASARI

Name of partner	:	KJUB (Koperasi Jasa Usaha Bersama) Puspetasari			
Core business	:	Feed companies specialising in cattle fattening and dairy feed			
Sector	:	Beef	Location	:	CJ, EJ
Intervention	:	Promoting cattle specific concentrate feed for improving cattle productivity			
Partner objectives : • Increase high quality feed selling, trough product diversification, expanding distribution network to new area using high quality marketing stuff			PRISMA facilitation : • Expand and increase capacity of distribution channel • Develop improved offline and online marketing strategy • Conduct study and market research for new product and area • Provide capacity building to female/male farmers, PSP staff and ISPs		

Name of partner	:	PT Pupuk Kalimantan Timur			
Core business	:	A state-owned corporation producing fertiliser and other agro-chemical products			
Sector	:	Soil Treatment	Location	:	EJ, NTB, NTT
Intervention	:	Promoting high quality commercial fertiliser and best fertilising practice			
Partner objectives : • Increase commercial fertiliser selling through expanding collaboration with other stakeholders (multi-stakeholder partnership) • Become a growing and sustainable world-class company in the fertiliser, chemical and agrobusiness industry"			PRISMA facilitation: • Strengthen retailers' marketing/ sales skills through TOT • Facilitate multi-stakeholder partnerships to leverage farmers producing products for institutional buyers • Market segmentation analysis • Improve distribution channels and work with more retailers • Develop new side business for retailers • Develop an R&D station aimed at developing organic products which target women in NTB • Improve the PKT field activity reporting system.		

Name of partner	:	CV Semi			
Core business	:	Mung bean seed nursery, producing certified mung bean seed (Vima variety) which currently is serving both market and government programs. It is also a distributor of agriculture input products for some agri-input companies			
Sector	:	Mung bean	Location	:	Central Java
Intervention	:	Promoting certified mung bean seed and GAP			
Partner objectives : • Enlarge the mung bean seed business by expanding its mung bean seed market nationwide through the market			PRISMA facilitation: • Provide business analysis and solutions to facilitate partner's development of better strategy vis-à-vis the mung		

(retailers/distribution channels) and government subsidy program.	bean seed market (e.g. improve distribution channels, linkage with government, linkage with potential off-season contract farmers to produce more mung bean seed).

CO-FACILITATOR

Name of partner	:	Yayasan Kalimajari			
Core focus	:	The foundation focuses on seaweed and cacao commodities by implementing projects on capacity building, research and technical assistance, funded by various private and public institutions			
Sector	:	Seaweed	Location	:	Papua
Intervention	:	Seaweed improved seedlings			
PRISMA objectives : • Induce partnerships for improving improved seedling research and production • Improve MMAF strategy of improved seedling (and cultivation knowledge) provision and distribution system			Co-facilitator roles : Substantial role in • Mediating between/bridging seaweed seedling stakeholders • Knowledge and information sharing • Providing inputs and presenting findings on seedling development to all partners		