

## Legacy Impact Brief

# PRISMA

# Sectors



Kementerian PPN/  
Bappenas



Australian Government

The Australia-Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture (PRISMA) is a development partnership between the Government of Australia (Department of Foreign Affairs and Trade, DFAT) and the Government of Indonesia (Bappenas).

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# Introduction

This **Legacy Impact Brief – Sectors** presents the final outcomes and key achievements in 12 agricultural commodities for the Australia-Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture (PRISMA).

PRISMA has supported a transformation in agricultural sectors in Eastern Indonesia, from pioneering innovations to scaling ideas. For example, introducing quality pig breeds to increase litter sizes and faster fattening times and scaling mechanisation services for rice and maize farmers for faster and more cost-effective harvesting.

From 2013 to 2024, PRISMA partnered with 273 private sector partners and the government of Indonesia to address market barriers to growth and open access to productivity-enhancing products and services for smallholder farmers. In 11 years, PRISMA benefited 1.48 million smallholder farming households with productivity and income increases and used its evidence and experience to support pragmatic policy reform.

PRISMA adopts a market systems development approach to enhance markets and, as a result, improve the productivity, livelihoods, and well-being of smallholder farmers. In the agricultural sector, essential functions like information, technology, finance, and regulations can enhance farmers' access to products and services. PRISMA has played a key role in influencing and supporting these critical market functions to benefit smallholder farmers.

The change is not static but a process that will continue to unfold beyond the program's life, bringing ongoing benefits to the community. A PRISMA survey found farmers used income increases to re-invest back into agriculture, economic activities, and children's education. Businesses have developed inclusive models that generate higher revenues. At the program's conclusion, there has been an additional AUD 148 million in increased revenue for partners. For PRISMA, commerciality is sustainability.

Example achievements from PRISMA interventions include 655,632 smallholder beef cattle farming

households benefited from the adoption of quality cattle feed and good livestock management practices; 280,610 farming households benefited through on-time availability and balanced application of fertiliser; and 139,154 rice farming households benefited by using high-yielding and climate-smart varieties of rice seeds. The achievements are tracked using rigorous, data-driven results measurement and learning systems that adhere to the DCED standard – the global standard for MSD programs.

Overall, PRISMA's sector support has fostered growth and resilience among farmers. Small and medium businesses now have the market conditions to grow and thrive, and markets are more inclusive, helping all smallholder farmers build stronger communities. This legacy will be seen for years to come.



The image displays three documents from the PRISMA Legacy Impact Brief series. On the left is the 'Policy' document, featuring a grid of farmer portraits and the PRISMA logo. In the center is the 'Sectors' document, which includes a map of Indonesia and various statistics. On the right is the 'Numbers' document, showing a list of key metrics and achievements.

**PRISMA in Numbers**

Category	Value
Years of operation	11
Partners	6
Smallholder farming households benefited	12
Partners	273
Smallholder farming households benefited	1,480,000
Smallholder farming households benefited	1,375,000
Smallholder farming households benefited	476
Smallholder farming households benefited	148%
Smallholder farming households benefited	59%
Smallholder farming households benefited	301,811
Smallholder farming households benefited	318,548
Smallholder farming households benefited	2
Smallholder farming households benefited	123%
Smallholder farming households benefited	4.31
Smallholder farming households benefited	22%
Smallholder farming households benefited	28%
Smallholder farming households benefited	24%
Smallholder farming households benefited	31%
Smallholder farming households benefited	273
Smallholder farming households benefited	139
Smallholder farming households benefited	89
Smallholder farming households benefited	138
Smallholder farming households benefited	73%
Smallholder farming households benefited	AUD148 million
Smallholder farming households benefited	AUD311 million
Smallholder farming households benefited	15,142
Smallholder farming households benefited	AUD207 million

**This Legacy Impact Brief – Sectors** can be read with PRISMA's **Legacy Impact Brief – Policy**, a book of farmer stories, climate-smart agriculture case studies, and GEDSI tools, manuals, and guidebooks. Together they present PRISMA's legacy.

# PRISMA in Numbers



**11**

Year program  
2013-2024



**6**

Provinces in  
Eastern Indonesia



**12**

Agricultural commodities  
(as of 2024)




## Impact

### Smallholder farming communities

**1,485,093** 

Smallholder farming households benefited with increased incomes

**148%** 


More than PRISMA's end-of-program of target 1m smallholder farming households

**918,648** 

Farming households in poverty (under USD5.50 purchasing power parity poverty line) with increased incomes

**4.01 million** 


Farming households have access to, or information on, innovations for improved productivity

**31%** 


Of farmers from a PRISMA social impact survey invested in economic activities

**1,375,034** 


Women smallholder farmers with increased incomes

**59%\*** 


Women have experienced increased incomes due to inputs and services offered by PRISMA's partners.

**2** 

Businesses are piloting indigenous-inclusive business models

**22%** 


Of farmers from a PRISMA social impact survey invested increased incomes in children's education

**476** 


People with disabilities with increased incomes

**901,911** 


Are youth (aged 18-35 years)

**123%** 

Increase in income for smallholder farming households

**32%\*** 

Women have a more manageable workload

**24%\*** 

Women have expanded their leadership and social networks

\*From surveys of 2,422 women in 12 sectors since 2020



## Sustained investment



**273**

Private and public sector partners



**199**

Private sector partners adopted inclusive business models



**180**

Locally led businesses supporting inclusive business models



**105**

Non-partners copying innovations



**78%**

Closed partnerships continued innovations post-collaboration



**AUD148 million**

Increased revenue for partners



**AUD311 million**

In private-sector investment leveraged



**15,142**

Small and medium-sized enterprises with increased revenue



**AUD247 million**

Increased revenue for small and medium-sized enterprises



#PETANI MAJU  
#FUTURE FARMERS

## Climate change



**139,229 tonnes**

Carbon equivalent emission reduction



**55.3%**

Of interventions included a climate change element, of which 74.8% had a mitigation element, 5.2% had an adaptation element, and 20% had both mitigation and adaptation elements.

## Continuing the legacy



**179**

Policy engagements



**2**

Universities have incorporated PRISMA evidence into their curriculums



**2.68 million**

People reached through Petani Maju/Future Farmer campaign promoting innovations



**197**

Media articles promoting innovations and inclusive businesses



**7.9 million**

People reached (2022-2024)



**A network**

Of talented staff ready to enter the private sector with improved knowledge of developing agricultural ecosystems.

## Sector Beef

Outreach figures cumulative 24S2



**655,632**  
Beneficiaries



**87%**  
NAIC

### Vision

Small-scale beef producers in East Java, Central Java, and West Nusa Tenggara (NTB) increase cattle productivity through improved livestock management practices. To achieve this, PRISMA supports feed and animal pharmaceutical companies in introducing high-quality, affordable cattle feed and pharmaceuticals. PRISMA also works with the government to update feed standards (SNI) and overarching regulations, develop new industry guidelines, build capacity for feed certification, and improve the live cattle trading system.

### Context

Although Indonesia is the largest beef producer in Southeast Asia and its beef cattle sector has been growing by 3.16% annually, Indonesia's cattle farmers have not been able to keep up with the booming domestic demand for beef. With domestic production contributing only around 54% of the total market for beef, Indonesia relies on imports to make up the shortfall.<sup>1</sup> Meanwhile, since 2000, the government has introduced numerous programs and policies to reduce the country's dependence on beef imports, with an ambition of becoming 90% self-sufficient in beef production.<sup>2</sup> East Java, Central Java, and NTB are the largest cattle-producing provinces, representing 45% of the country's cattle population and 59.6% of small-scale beef producers.<sup>3</sup>

### Constraints

Cattle production and productivity are low, with the sector operating under a low input-output production system resulting in suboptimal weight gain, long intervals between calving, and poor health conditions. This is because smallholder farmers: (1) rely on native grass and fodder rather than commercial feed; (2) have limited access to affordable feed, pharmaceuticals, and veterinary services; and (3) have poor knowledge of livestock management practices. An ineffective cattle trading system and government regulations on cattle feed compound this.

## Key Achievements

After 10 years of PRISMA's engagement, a substantial shift has occurred in Indonesia's smallholder beef cattle farming with the establishment of a new market for quality commercial feed. Through PRISMA, 655,632 farming households have benefited from improved cattle productivity, increasing their incomes by an average of 87%. PRISMA achieved this by working with 17 private sector partners across 3 provinces.

Before PRISMA, only 2% of farmers in Indonesia used commercial feed. Now, many smallholder beef cattle farmers (including 64% in East Java and 33% in Central Java) use commercial feed. The majority of the commercial feed users are satisfied with the feed products, and nearly 71% are repeat users. From a baseline of 2 feed companies, there are now 63 feed companies, including 6 PRISMA partners, selling concentrate feed through 1,155 agents. PRISMA's feed partners have invested heavily in feed production and distribution systems, including expansion to new provinces such as West Sumatra, NTB, South Sulawesi, and East Kalimantan. Most partners reported growing their business portfolio after implementing improved strategies such as education-based promotions and digital marketing.

As the feed sector grew and more feed companies started to sell cattle feed, difficulties in complying with the existing standards became a key barrier for micro, small, and medium-sized feed producers and the overall growth of the beef feed market. In response, the government changed the national feed standards to enable more companies to enter the feed market and produce good-quality feed at a price point that smallholder farmers could afford. To accommodate the update on national feed standards and accelerate the process of feed registration, the government has developed national guidelines for animal feed companies and is training feed auditors, feed quality supervisors, and feed producers on the new guidelines.

In addition, PRISMA has worked with 4 pharmaceutical companies to improve animal health for beef cattle. As a result of PRISMA's support with product development and strategy improvements, all partners have increased their revenue and are still targeting and educating farmers in good livestock management. The majority of customers are satisfied with the pharma products and 91% plan to continue using them. Now, 5 pharma companies, including 4 PRISMA partners, are actively promoting pharma products and educating farmers in good livestock management.

Progress was also made in the sector with the creation of a commercial case for disability inclusion. While PRISMA has yet to promote this commercial case more broadly, the partner involved in the pilot has committed to integrating disability inclusion into its business strategy by building internal capacity around disability inclusion, working with local disability organisations to identify farmers with disabilities, and using disability inclusive promotional approaches to reach these farmers, including working through retail agents with disabilities.



*Extraordinary is the word I used when describing PRISMA's impact on farmers and businesses in the cattle sector in East Java. I met business owner, Pak Munir and the farmers that are using his cattle feed and heard first-hand about the impact of the model on their lives, their families, and communities.*

**Ir. R. Anang Noegroho Setyo Moeljono, M.E.M.**  
Director of Food and Agriculture, Bappenas  
Government of Indonesia.



Cattle farmer in Tuban.



## Reflections/Key Learnings

Overall Phase 2 progress in the sector was above PRISMA's expectations, with the sector rapidly expanding over this period. At the beginning of Phase 2, PRISMA did not anticipate that the farmers' adoption of concentrate feed would grow that fast, triggering massive crowding-in by feed producers in East Java. Once a critical mass of farmers began seeing the benefits of using concentrate feed, it became easier to convince more farmers to purchase the product despite its cost. This, in turn, provided strong incentives for more feed producers to enter the market.

The two key learnings (additional learnings from PRISMA's high priority policy initiative in beef is featured under Annex 2) that PRISMA-2 has taken away from working on beef are:



**To strengthen the market resilience and competitiveness of sectors, market systems programs will likely need to work in multiple supporting functions and the business enabling environment.** Although quality feed has become mainstream in Java as a result of PRISMA's work in this area, in order to sustain this impact, PRISMA needs to complement its feed interventions with interventions to promote good animal health practices for farmers and more inclusive business environment for feed producers. Animal health practices can enhance market resiliency from severe impacts of animal disease outbreaks while a more inclusive business enabling environment (e.g. reform of SNI) can remove barriers to market entry and promote further growth.



**Given the Environmental challenged by the cattle sector, particularly its significant contribution to greenhouse gas emissions, it is even more imperative for programs to actively identify and promote climate-smart innovations.** The cattle sector is the single largest agricultural source of methane globally, emitting nearly 10% of all greenhouse gas emissions (GhG).<sup>4</sup> In addition to promoting nutrient-dense concentrate feed, which can lower the GhG emissions, PRISMA has also supported trials for more innovative feeding technologies, such as Emission Control Blocks (ECB). Given the nascent stage of introducing such technologies, further development funding will be critical for trialling and introducing such climate-smart innovations.

## Sources of Evidence

1. Justiari, M. P. J., Muhammad, M., & Widi, H. (2023). *Mencari Alternatif Impor Sapi Hidup*. Kompas.id.
2. Beef and Buffalo Meat Self-Sufficiency Program; Special Efforts for the Mandatory Pregnant Cows; National Mainstay Commodity Buffalo Cow Program; Justiari, M. P. J., Muhammad, M., & Widi, H. (2023). *Mencari Alternatif Impor Sapi Hidup*. Kompas.id.
3. Statistics Indonesia. (2023). *Beef Cattle Population by Province 2021-2023*; Directorate General of Livestock and Animal Health, Ministry of Agriculture. (2022). *Livestock and Animal Health Statistics 2022*.
4. Nitta, N., & Grist, J. Scientific American. (2023). *Quitting Cows Could Have Big Environmental Impacts, but It's Harder Than It Sounds*. Scientific American.



Sector

# Crop Protection



Outreach figures cumulative 24S2



**146,869**  
Beneficiaries



**35%**  
NAIC

## Vision

Smallholder rice and maize farmers in East and Central Java reduce their harvest loss by using safer crop protection products in an appropriate way. PRISMA achieves this by supporting crop protection companies in improving their marketing and communication strategies with better education and training for farmers.

## Context

Crop protection methods are widely used by rice and maize farmers across East and Central Java, but the existing methods have been ineffective at reducing losses caused by pest and disease attacks. Despite how 86% of 5.2 million rice farmers in East and Central Java use pesticides, the majority (nearly 80%) experience harvest loss due to pests and disease.<sup>1</sup> Similarly, 54% of 705 thousand maize farmers in East and Central Java use pesticides, but 51% are still experiencing harvest loss from pests and disease.<sup>2</sup>

## Constraints

Farmers in East and Central Java do not have sufficient knowledge of good crop protection (GCP) practices. The main reason for the continued loss of crops is that farmers cannot effectively identify pests and diseases and do not apply the correct product or dose. Inadequate extension services exacerbate poor pest and disease management. At the same time, most companies prioritise hard-selling of products (i.e. persuading farmers to make immediate purchases) over education for farmers, and only a few crop protection companies offer knowledge on crop protection to farmers.<sup>3</sup>



## Key Achievements



*The collaboration with PRISMA has benefited us as a new company. Previously, our promotional activities were lacking. Through the partnership with PRISMA, we gained valuable insights into effective promotional strategies. As a result, our promotional activities have substantially increased this year.*

**Hermawan Abdillah,**  
Marketing Manager at PT Etong  
Chemicals Indonesia.

After 5 years of PRISMA's engagement, 146,869 farming households have increased their incomes by 35% or IDR5.3 million (AUD530) per season. Rice and maize farmers in East and Central Java have reduced harvest losses by 32%, equivalent to savings of IDR 1.8 million (AUD180) per planting season. This result was achieved through working with 8 crop protection companies and one crop protection association, which invested in educating smallholder farmers on GCP practices and safer crop protection products.

Prior to PRISMA, crop protection companies did not consistently educate farmers on GCP. Now, 14 companies, including 8 PRISMA partners, actively disseminate more comprehensive knowledge (e.g. on pest cycles, pest symptoms, correct application) to farmers. Partners have shown a strong commitment to using an education-based marketing strategy, with some taking greater ownership of the new marketing strategies by independently offering consultation clinics to farmers or providing continued internal training to staff to improve the effectiveness of education-based marketing. At the farmer level, farmers who have been exposed to education-based marketing have expressed high levels of satisfaction, with 85% committed to applying the new knowledge gained and over 42% now using the correct dosage.

## Reflections/Key Learnings

Overall Phase 2 progress in the sector was as projected, with some unforeseen tailwinds for the sector as a result of COVID-19. Despite the challenges that COVID-19 posed for the growth of many sectors, in the case of crop protection, the movement restriction regulation presented an opportunity for PRISMA to support companies to pivot towards a digital marketing strategy. This helped to accelerate the embedding of farmer education and training by crop protection companies.

**The main learning that PRISMA-2 has taken away from working on crop protection is:**



**Programs should encourage companies to use a combination of both hard-selling and education-based marketing strategies, with a higher emphasis on education-based marketing.** According to PRISMA's comparison study, this can lead to higher commercial outcomes, including higher revenue per field staff ratio when compared to companies focusing solely on a hard-selling strategy. The study shows that companies should strengthen their education-based marketing, as farmers' exposure to education leads to higher brand awareness and customer retention. Companies benefit from increasing the number of field education activities and broadening the scope of knowledge shared with farmers. At the same time, companies can also benefit from continuing some degree of hard-selling as this can help maintain relationships with retailers, which is critical given high competition among crop protection companies.





Farmers in Sukoharjo, Central Java, discussing the use of PT Etong's pesticides.

## Sources of Evidence

1. Statistics Indonesia. (2013). *Agriculture Census 2013.*; Statistics Indonesia. (2017). *Results of Cost Structure of Paddy Cultivation Household Survey 2017.*
2. Statistics Indonesia. (2013). *Agriculture Census 2013.*; Statistics Indonesia. (2017). *Result of Cost Structure of Secondary Food Crops Cultivation Household Survey 2017.*
3. Thorburn C. (2015). *The Rise and Demise of Integrated Pest Management in Rice in Indonesia.* *Insects*, 6(2), 381–408.



## Sector

# Dairy

Outreach figures cumulative 24S2



**17,278**  
Beneficiaries



**46%**  
NAIC

### Vision

Small-scale dairy farmers in East and Central Java have improved milk quality and productivity, as a result of adopting good practices in rearing, feeding, and health management and gaining access to good dairy breeds and more secure end markets where milk price is based on quality. PRISMA achieves this by supporting feed and pharma companies to promote quality concentrate feed and pharmaceuticals, along with good dairy farming practices at the farm-level; advocating for improved dairy breeds; and working with dairy processors to improve milk handling at collection points and expand distribution networks.

### Context

Indonesia has faced a significant milk deficit for many years, with domestic production meeting only about 20% of demand. A substantial portion of the milk supply comes from imports.<sup>1</sup> East and Central Java contribute nearly 67% of the local supply,<sup>2</sup> supported by 115,000 smallholder dairy farms.<sup>3</sup>

### Constraints

Milk productivity and quality in Indonesia are suboptimal. This can be attributed to several factors: limited access to high-quality feed, pharmaceuticals, and veterinary services, as well as the absence of suitable dairy breeds for tropical climates. Additionally, farmers often lack knowledge of effective dairy farming practices. The situation is further exacerbated by outbreaks of Foot and Mouth Disease (FMD) and Lumpy Skin Disease (LSD), which have reduced the cattle population and milk productivity.

## Key Achievements

After 5 years of PRISMA's engagement, 17,278 households have increased their incomes by 46% through the use of high-quality feed, effective animal health management, and improved milking practices. PRISMA achieved this by partnering with 7 private sector companies, including 4 feed companies, 2 animal health companies, and 1 off-taker.

Now, 26 companies, including 4 PRISMA partners, sell affordable feed to farmers in East and Central Java, compared to 12 feed companies in 2019. PRISMA also persuaded pharmaceutical companies to target and educate farmers on disease prevention and treatment such as FMD, LSD, and mastitis. This initiative has encouraged pharmaceutical companies to expand their focus from poultry to cattle, increasing the number of pharma companies serving the cattle market from 3 to 8 since 2019. This includes both of PRISMA's animal health partners. By adopting good farming practices, PRISMA's

beneficiaries reached a productivity level of 12.65 litres/day (from a baseline of 10.79 litres/day) and exhibited post-outbreak resilience with milk production recovering 3.5 times faster than other farmers. With PRISMA's support, the Ministry of Agriculture (MoA) has developed a FMD recovery strategy to boost the cattle population and milk production. This strategy is now being implemented, and the MoA is also developing operational guidelines for smallholder dairy farmers.

In terms of social inclusion, a strategic pilot in 2023 established a commercial case for working with retail agents and dairy farmers with disabilities. While PRISMA has yet to promote this commercial case more broadly, the partner involved in the pilot has committed to continue increasing disability awareness through its business practices and networks, including by working with retail agents with disabilities. As the pilot also involved district government, the district level livestock agency and social agency are now more open to collaborating with private sector to improve outcomes for farmers with disabilities.



*The dairy sector's recovery has been sped up thanks to PRISMA's support to private companies, government, and farmers to increase productivity at the farm-level and to make farmers more resilient to shocks. The faster recovery of the sector also supports the priorities of our next President, in particular the free milk drinking program for school children*

**Dr. drh. Agung Suganda,**  
Director of Breeding & Livestock,  
Ministry of Agriculture.



Purwadi, assisted by his staff, collecting milk from his farm in Gedong Village, Banyubiru District, Semarang Regency, Central Java.



## Reflections/Key Learnings

Overall Phase 2 progress in the sector was as PRISMA projected despite major market disruptions from FMD and LSD outbreaks since 2022. Collaborations with market actors along the value chain, namely input companies and cooperative associations, as well as with the government for policy advocacy have significantly contributed to PRISMA's ability to maintain momentum in the dairy sector.

**The two key learnings (additional learnings from PRISMA's high priority policy initiative in dairy is featured under Annex 2) that PRISMA-2 has taken away from working on dairy are:**



**Farmer-targeted education and policy engagement during market shocks are essential to sustain productivity and accelerate post-outbreak recovery.** The 2022 FMD outbreak caused a significant decline in the cattle population and productivity. While farmer education on animal health practices can accelerate the recovery of milk production, government interventions (e.g. vaccination and bio-security programs) can help minimise potential economic loss from outbreaks.



**Programs should assess not only the impact that sectors have on climate change but also how climate change can impact these sectors.** Although the dairy sector is a major contributor to climate change through the emission of methane gases, it is also a sector that is heavily impacted by rising global temperatures. Since heat stress in dairy cattle can significantly disrupt milk production, it is important to invest in climate-smart innovations (e.g. closed-house pen systems) to ensure the sustainability of this sector.

## Sources of Evidence

1. Statistics Indonesia. (2023). *Dairy Cattle Population by Province 2021-2023*.
2. Statistics Indonesia. (2023). *Dairy Cattle Population by Province 2021-2023*.
3. Statistics Indonesia. (2020). *Dairy Cattle Population 2019-2020*.; Statistics Indonesia. (2013). *Agricultural Census*.





Sector

## Finance



Outreach figures cumulative 24S2



**23,646**  
Beneficiaries



**32%**  
NAIC



## Vision

Smallholder farmers can access quality inputs and services through better financed agri-kiosks. PRISMA achieves this by working with financial service providers (FSPs) to introduce flexible loans to agri-kiosks and by improving the enabling environment for agri-SME financing.



## Context

Agricultural finance is predominantly distributed to large corporations (such as plantations), with only 28% of the total agriculture loan portfolio allocated to the micro, small, and medium enterprise (MSME) segment.<sup>1</sup> Meanwhile, 72% of agri-kiosks report that they require finance to procure stock. Insufficient financial liquidity hinders agri-kiosks from procuring a wider variety of high-quality agri-inputs and having sufficient inventory of agri-inputs when demand is high. More flexible working capital can help agri-kiosks better manage their cash flow, stock sufficient products for the agricultural season, and potentially offer additional agricultural services or even flexible payment options to farmers. This, in turn, could improve farmers' access to quality inputs and services.



## Constraints

On the demand side, unlike mainstay non-agricultural businesses, agri-kiosks are seasonal and often lack sufficient working capital to stock high-quality products during peak periods and to diversify into other areas, such as mechanisation services and commodity trading. Kiosks are constrained by inappropriate loan products (e.g. inflexible monthly repayment terms, long loan term lengths of one or more years), uncertain business conditions, a lack of financial literacy to choose the right product, and a lack of financial product information. On the supply side, financial institutions (FIs) have low incentives to lend to agri-kiosks due to perceived risks associated with agriculture and a lack of knowledge regarding the potential agri-SME market.<sup>2</sup> In addition, FI sales agents prefer to sell more standard loans since they lack incentives to diversify their portfolio and the ability and product knowledge to sell more flexible loans.

## Key Achievements



*Our partnership with PRISMA has inspired a deeper focus on agriculture, elevating its ranking in our portfolio from 5th to 2nd place. Given the program's success, we would like to continue using the program name to independently advance this initiative further.*

**Ariyawan Sutanto,**  
Micro Banking Head at Bank Mandiri  
Central Java Region.

After 5 years of PRISMA's engagement, 23,646 farming households in East Java, Central Java, and NTB have benefited from better access to finance for farmers and agri-kiosks, resulting in a 32% increase in income. This was achieved by collaborating with 8 FSPs, including 4 FIs, 3 fin-tech companies, and one input company, which disbursed a total of AUD 18.2 million in loans.

Since 2022, PRISMA has shifted its strategy to focus primarily on strengthening access to finance for agri-SMEs (especially agri-kiosks), including through more flexible credit such as overdrafts and revolving loans, as well as through terms of payment that match the seasonal demands for capital from agri-kiosks. Prior to PRISMA, FIs were providing flexible loans but only to large agri-SMEs with an average minimum monthly turnover of IDR 500 million. Now, there are 4 FSPs, all PRISMA partners, offering flexible loans to smaller agri-SMEs and at least one partner has taken further steps to expand its marketing department

to acquire more agri-SME clients. At the partner level, there is strong evidence of a significant increase in loan disbursement in the agriculture sector. However, as partners have only started disbursing loans to agri-kiosks in late 2023, it is too early to assess the impact of the agri-kiosks loans on farmers' access to inputs and services.

In terms of policy, PRISMA has developed an evidence-based policy brief providing recommendations on agri-SME financing (e.g. how to more effectively implement flexible loans through both commercial and subsidy loan schemes) with the intention of sharing the brief with relevant government stakeholders, such as the Financial Services Regulator (OJK) and Coordinating Ministry of Economic Affairs.



## Reflections/Key Learnings

Overall Phase 2 progress in the sector was slower than expected, with many of the early business models not being replicable or only being scalable to a limited degree. Furthermore, the pandemic hit the finance sector hard, making agricultural finance a low-priority for FIs. A major turning point occurred in 2022 when PRISMA's finance team overhauled its strategy and introduced a new strategy revolving around agri-kiosks. The new strategy had a clearer focus, set right-sized expectations, and made better use of available resources. As a result of the limited time remaining to execute on the new strategy, change is currently limited to the partner level and the sector has yet to prove the scalability of the impact at the farmer level.

**The two key learnings that PRISMA-2 has taken away from working on finance are:**



**When developing and rolling out flexible financing options, MSD programs do not necessarily have to confine themselves to partnering with FIs.** Alternative FSPs, such as agri-tech companies or agri-input companies, can also be important providers of finance. For example, agricultural e-commerce companies can offer Buy Now Pay Later (BNPL) flexible finance options to agri-kiosk companies through their apps while agri-input companies may offer options to pay in instalments.





While direct farmer financing is rarely commercially viable, programs can explore opportunities to improve conditions for farmers through better flexible financing options for other agricultural actors. Direct farming financing is risky and has a high transaction cost, making it unattractive for most FIs. There are even fewer commercial opportunities for direct farmer financing in Indonesia as a result of competition from government subsidised farmer loans. On the other hand, agri-kiosks are a more attractive segment for FIs given their cash flow and size of loans demanded. By broadening the scope to other agri-SMEs which have similar seasonal working requirements (e.g. traders, nurseries, and machinery operators), this makes the market even larger and hence more appealing to FIs.



Enhancing agri-retailers' cash-flow management to provide better products and services to farmers.

## Sources of Evidence

1. Otoritas Jasa Keuangan. (2021). *Indonesian Banking Statistic* (Vol. 19, No. 13).
2. World Bank Group. (2020). *An Exploratory Overview of Agriculture Finance in Indonesia : Background Paper 1 - Agro-Value Chain Assessment*. Washington, D.C.

Sector

# Information and Communications Technology (ICT)

Outreach figures cumulative 24S2



**2,349**  
Beneficiaries



**64%**  
NAIC

## Vision

Smallholder farmers in Central and East Java have better access to good agricultural practices (GAP) information, inputs, and agri-services through more tech-savvy and tech-enabled agri-kiosks. PRISMA achieves this by supporting agri-tech companies to provide agri-kiosks with ICT solutions that ensure agri-kiosks are better managed, stocked appropriately with products in a timely fashion, and offering an increased range of agricultural services, as well as relevant quality advice.

## Context

In the agriculture sector, digital literacy varies depending on where market actors are along the value chain—the further upstream market actors are, the lower their digital literacy. Only 22% of farmers use the internet,<sup>1</sup> limiting their access to information on agri-inputs, commodity prices, and GAP. In contrast to farmers, 68% of agri-kiosks own mobile phones, 66% have internet access, and 44% use this to search for agricultural information.<sup>2</sup> Agri-kiosks can play an important role in supporting farmers through the provision of a range of agri-inputs and agricultural information.

## Constraints

Smallholder farmers lack access to quality information on GAP (e.g. safe usage of crop protection products, correct fertiliser dosage), agro-input product information, and commodity prices. They have limited sources of agricultural information since the public extension service cannot provide universal coverage, and input and service providers often do not provide sufficient embedded information. Despite the potential for agri-kiosks to provide information and technologies to farmers, kiosks often lack access to credible sources of services and GAP information, have incomplete product lines, and insufficient stock to meet demand at the right time. Concurrently, input and service providers are unaware of the opportunity that kiosks present, and the search costs of identifying kiosks are high.



## Key Achievements



*During the development stage of building a digital platform, we initially wanted to target farmers. However, we found that targeting kiosks as the first phase to help reach farmers in the future is more feasible as kiosks are more digitally literate and more economically feasible. Thank you to PRISMA for speeding up the development of agriculture information for kiosks (Klinik feature), aiming to improve knowledge shared by kiosks to farmers.*

Abhishek Gupta,  
Founder of Semaai.

After 5 years of PRISMA's engagement, 2,349 farming households in East Java have better access to inputs as a result of ICT solutions in agriculture, leading to a 64% increase in income for these households. PRISMA achieved this by working with 14 partners, including 9 agri-tech companies and 2 agri-input companies. All ICT partners that have worked with PRISMA on agri-kiosk digital solutions have expressed that they will continue maintaining or even adapting the business models and innovations introduced by PRISMA.

Since 2022, PRISMA's ICT and finance sectors have shared the same overall goal to improve the ecosystem around agri-kiosks. Previously, farmers mainly relied on extension services and peer farmers for information. At the same time, agri-kiosks relied on a limited amount of information provided by agri-input suppliers. Now, nearly 5,100 agri-kiosks have access to better agricultural information through an app catering specifically to agri-kiosks. This app existed previously but had not integrated features around agricultural information. In addition, nearly 600 agri-kiosks have been able to maintain or increase their inventory as a result of better access to working capital through a Buy Now Pay Later (BNPL) flexible finance option offered through PRISMA's agri-tech partners.



## Reflections/Key Learnings

Overall Phase 2 progress in the sector was slower than expected since there was initially no clear overarching strategy for ICT. The focus at that time was mainly on reaching farmers directly, which was not a viable strategy given the low digital literacy and smartphone ownership among farmers. Furthermore, PRISMA was mainly focusing on building new mobile apps, which is costly and has a high risk of failure when compared to integrating new mobile features into existing, more established mobile apps, which is the strategy PRISMA eventually pivoted to. None of these interventions succeeded, and all of the partnerships from this period have been closed or discontinued. A major turning point occurred in 2022 when PRISMA's ICT team overhauled its strategy and introduced a new one revolving around agri-kiosks. As a result of the limited time remaining to execute on the new strategy, change is currently limited to the partner level and the sector has yet to prove the scalability of impact at the farmer level.

**The two key learnings that PRISMA-2 has taken away from working on ICT are:**

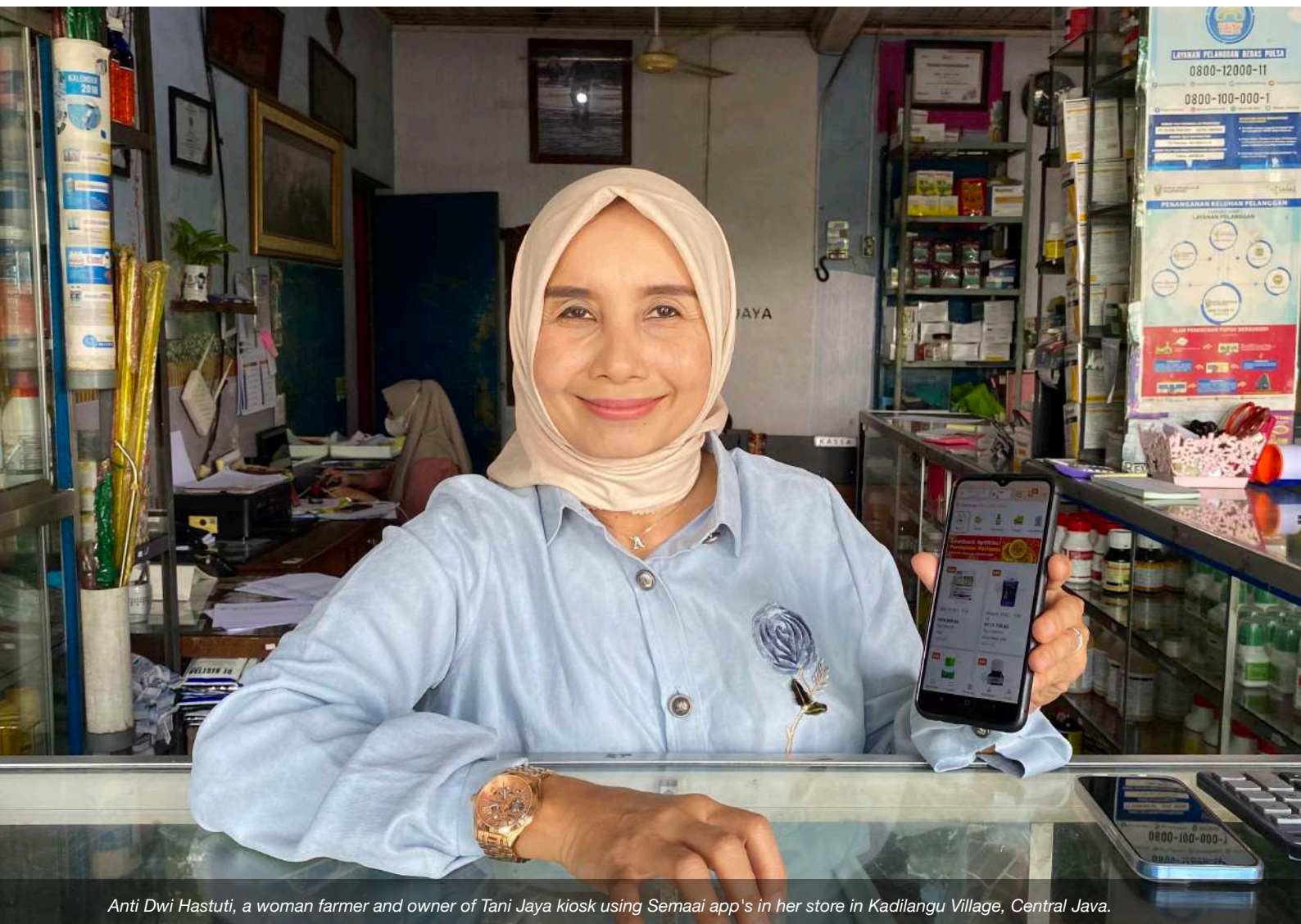


Since mobile apps that directly target farmers may struggle to reach scale, programs should explore opportunities to benefit farmers by digitising other market actors along the agricultural value chains (e.g. agri-kiosks). Reaching farmers directly with digital information can be difficult due to low smartphone ownership, low internet usage, and farmers' preferences for face-to-face interactions. Compared to farmers, kiosk owners have better connectivity and higher digital literacy. As all Indonesian farmers interact with agri-kiosks and kiosks are their 3rd most trusted source of information, more tech-savvy kiosks are in a strong position to pass on information and promote new agricultural technologies to farmers. Leveraging kiosks can also lead to more scalable and commercially viable solutions.





Complex sectors like ICT, where a program targets an intermediary such as an agri-kiosk (rather than farmers) as the main users of digital technologies, will necessitate more flexible approaches to results measurement and implementation, as well as more conservative impact projections. Since the link between kiosks as better informers and farmers being more productive is tenuous, this poses challenges when trying to quantify the direct economic benefit on farmers. However, what PRISMA can measure are the numbers of farmers accessing information from kiosks, alongside the perceived benefits from the information and whether farmers value that information. This is different from interventions in PRISMA's commodity sectors where the cause and effect relationships are relatively linear.



*Anti Dwi Hastuti, a woman farmer and owner of Tani Jaya kiosk using Semaai app's in her store in Kadilangu Village, Central Java.*

## Sources of Evidence

1. Statistics Indonesia. (2018). *National socio economic survey for Indonesia 2018*.
2. PRISMA. (2020). *Impact of COVID-19 on Agriculture- Kiosks Perspective: A qualitative study regarding Kiosk's behaviour during the COVID-19 pandemic in four PRISMA target provinces*.

Sector

# Maize Madura

Outreach figures cumulative 24S2



**126,472**  
Beneficiaries



**401%**  
NAIC

## Vision

Smallholder maize farmers in Madura use quality hybrid seeds and good agricultural practices (GAP) to increase production and productivity. PRISMA achieves this by working with seed companies to improve private sector investment in the seed market and by facilitating public-private collaboration to improve the delivery of government subsidy programs.

## Context

Madura and its surrounding islands are part of East Java province. There are more than 370,000 maize farmers in Madura,<sup>1</sup> covering 292,000 hectares (ha), which is approximately 22% of East Java's maize cultivation area.<sup>2</sup> While Madura has the potential to be a maize production hub that supplies feed mills in Java, instead, it is procuring maize from Java to fulfil demand from its local poultry industry. Local production is low, with average maize productivity at around 2.1 tonnes/ha. This is far below the rest of the province, where productivity is around 6 tonnes/ha.<sup>3</sup> There is potential to increase smallholder farmers' productivity so that smallholders can begin taking advantage of the growing demand for maize from feed mills in Java.

## Constraints

Farmers in Madura lack access to commercial hybrid seed and knowledge about the benefits associated with using hybrid seed and GAP. While local governments have consistently promoted hybrid seed through subsidy programs, the adoption rate has been limited as a result of the inferior quality of subsidised seeds, the absence of extension services, and delays in distribution.<sup>4</sup> Furthermore, subsidy planning has been inefficient, often resulting in high overlaps between the subsidy recipients and existing commercial seed users. This is a disincentive for seed companies to expand into Madura.



## Key Achievements



*Syngenta and PRISMA's collaboration in Madura has helped many farmers see the benefit of using hybrid seeds over the local variety. The business model created together with PRISMA is still used today and we've experienced a sales increase. Based on our success in Madura, we now plan to expand to NTT.*

**Khusaeri,**  
Regional Sales Manager Syngenta  
Seed Indonesia.



After 10 years of PRISMA's engagement, 126,472 farming households in Madura have increased their incomes by 401% or IDR 2.45 million per season (AUD 245). PRISMA achieved this by working with 5 partners, including 4 seed companies and 1 district agriculture office, to develop the commercial market for hybrid seeds in Madura.

Farmers' hybrid seed usage from commercial sources has increased significantly from 4% in 2015 to around 14% in 2023. Initially, 2 seed companies struggled to build a market in Madura due to the high overlap of subsidies with the commercial market. Sumenep, which has up to 85% of all subsidy recipients across Madura, is continuing to implement smart subsidy principles, which it first adopted in 2017. As a result, the commercial market has grown, and currently, 8 companies, which includes 2 PRISMA partners, are actively promoting and expanding hybrid seed distribution across Madura. This has led to the availability of hybrid seeds in 95 kiosks, enabling around 14% of Madurese farmers to continue purchasing hybrid seeds in the commercial market. Among commercial hybrid seed users, 77% reported habitual purchases.

Aside from these 8 companies, smaller seed companies are also building their distribution network in Madura by collaborating with crop protection companies that have recently added seed treatment and herbicides for maize to their product range in Madura. In the downstream market, instead of solely importing maize from Java, local off-takers are now also exporting maize grains and establishing direct business linkages to feed mills in Java during the main season. One national-level trader has also started to build its sourcing network in Madura, in collaboration with local off-takers.



## Reflections/Key Learnings

Overall Phase 2 progress in the sector was as PRISMA projected, with some fluctuations over the years. The commercial sector was rapidly expanding until the government allocated an unusually high seed subsidy in 2019. Agri-kiosks responded by reducing their investment in hybrid seeds, stunting the growth of the commercial market. However, after COVID-19, the national price of maize increased substantially, which encouraged farmers to invest in maize. While the commercial market began recovering, it grew at a slower rate than previously. The recovery of the market is also being supported by an unforeseen positive response from large off-takers who have started to export maize grains to mainland Java. This is likely a result of the increased maize demand in mainland Java, the close proximity of Madura to East Java, and the slower recovery of the poultry industry in Madura post-COVID-19.

**The main learning (additional learnings from PRISMA's high priority policy initiative in maize Madura is featured under Annex 2) that PRISMA-2 has taken away from working on maize in Madura is:**



While government seed subsidy programs can threaten the growth of commercial markets, they can also provide an entry point to develop seed markets. A targeted, time-bound seed subsidy program can act as an initial stimulus to introduce farmers in underdeveloped areas to the benefits of hybrid seeds. However, to effectively trigger farmer adoption and willingness to purchase seeds, a number of conditions need to be met: (1) the seed variety must match the characteristics desired in the target area; (2) seed subsidies must be delivered on time and accompanied by GAP assistance; and (3) subsidy programs should shift subsequent seed distributions to new underserved areas to avoid crowding out the development of commercial distribution channels in the area.



Suryati and Sudahri harvesting corn in Pongkeng Village, Sumenep, Madura.

## Sources of Evidence

1. Statistics Indonesia. (2018). *The Result of Inter-census Agricultural Survey of East Java Province (SUTAS 2018): Number of Maize Farming Households*.
2. Statistics Indonesia. (2017). *Harvest Area, Production and Productivity of Maize and Soybeans by District in East Java Province*.
3. Statistics Indonesia. (2017). *Harvest Area, Production and Productivity of Maize and Soybeans by District in East Java Province*.
4. Freddy, I. M., & Gupta, G. E. K. (2018). *Penguatan kebijakan ketahanan pangan: Reformasi mekanisme penyaluran benih jagung hibrida*. Center for Indonesian Policy Studies (CIPS).



Sector

# Maize NTT

Outreach figures cumulative 24S2



**40,006**  
Beneficiaries



**115%**  
NAIC

## Vision

Smallholder farmers in NTT use certified maize seeds and apply good agricultural practices (GAP) properly. PRISMA achieves this by improving the capacity of open-pollinated varieties seed producers (OPV nurseries) to produce certified seed; promoting certified seeds and GAP information for farmers through public extension workers, nurseries, and seed companies; facilitating local governments in the development and implementation of their maize sector strategy; and linking the NTT market to feed mill demand centres in Java, which encourages farmers to produce beyond subsistence.

## Context

Around 71% of farmers (473,000 farming households) in NTT are involved in maize production.<sup>1</sup> However, maize productivity in the province is very low, with an average of 2.5 tonnes per hectare (ha),<sup>2</sup> far below the national average of 5.2 tonnes/ha.<sup>3</sup> Maize NTT is a separate market system from Madura (another PRISMA sector) because it has a different set of market characteristics and constraints. Geographically dispersed farmers, poor infrastructure, a fragmented supply chain, low private sector presence, and a high level of government intervention are common characteristics of NTT's maize market system. Most of the grain in NTT is used for human consumption and household livestock. In contrast, maize in other regions is mainly used to supply livestock feed mills.

## Constraints

Farmers in NTT have limited access to information and knowledge on GAP and certified maize seeds, both OPV and hybrids. Local seed-producing nurseries mainly serve government subsidy programs rather than invest in developing a commercial market to reach farmers. Meanwhile, the downstream maize market in NTT is limited to local off-takers supplying the traditional market and independent livestock farmers. Bigger off-takers struggle to procure local maize because of limited availability and poor quality.



## Key Achievements

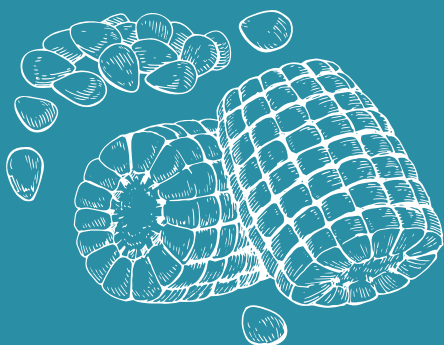
After 10 years of PRISMA's engagement, 40,006 farming households in NTT benefitted from using certified maize seeds and applying GAP, increasing their incomes by 115% or IDR 1.7 million per season (AUD 170). PRISMA achieved this by working with 22 partners, including 17 local seed producers, 2 hybrid seed companies, 1 off-taker, and 2 government institutions, to develop the commercial market for maize seeds in NTT.

Before PRISMA, no OPV seeds were available in the commercial market, and only a few agri-kiosks were selling a small quantity of hybrid seeds. Certified seeds are now available commercially in the main maize-producing areas, although the supply fluctuates yearly. Currently, 4 OPV seed varieties (Lamuru, Srikandi Putih, Pulut Uri, Jakarin) are sold and actively promoted in the commercial market through 4 local seed producers, all of which are PRISMA partners. More than 80% of farmers were satisfied with using the seeds and demonstrated willingness to repurchase. In the downstream market, one off-taking company, also a PRISMA partner, is actively procuring from 2 maize producing centres to supply feed mills in Java. The business model is expected to continue because it collaborates with local off-takers and supports farmers in obtaining quality seeds and loans with payment schemes at harvest.



*Because of PRISMA's support, my business is now known among farmers, villages, kiosks, and government.*

**Gaspar Bao,**  
Owner of Dala Agro Diankris, Sikka.



*What we find most useful is PRISMA's business advice on seed production, regulation, and marketing—also benchmarking against more advanced seed companies in Java.*

**Veni Samara,**  
Owner of Tiga Putri Mandiri (TPM), Belu.

With PRISMA's support, the provincial government has strengthened the GAP service in its seed assistance program, improved seed certification capacity, and increased the availability of parent seeds. The NTT government has adopted modules and learning videos to strengthen the capacity of public extension services to deliver GAP assistance.<sup>4</sup> So far, two district governments have completed the independent public extension capacity-building modules developed by PRISMA. PRISMA also advocated for increasing the capacity of certification services, and in 2023, the provincial government responded positively by adding field certification staff. PRISMA supported their training to deepen their understanding of seed production's technical and business development aspects. Since the same year, the provincial government has started considering the need for commercial seed production in the planning of parent seed production through semestral coordination meetings with the Association of Seed Producers in NTT. Meanwhile, the association has also gradually increased its role in providing parent seeds, increasing its availability for nurseries. Since the changes in the certification services and parent seed production system have only occurred in the last 15 months, it is too early to observe the broader impact on nurseries and farmers' access to quality seed.

In terms of disability inclusion, in early 2024, one local seed producer hired young people with disabilities to sort seeds. This was a collaboration with a state-owned training school for people with disabilities. The activity provided income for eligible students while increasing our partner's seed processing capacity. The activity has continued for several production batches due to student demand, and the partner is trying to replicate the model with 2 churches.

## Reflections/Key Learnings

Overall Phase 2 progress in the sector was slower than expected. While PRISMA observed positive growth in NTT's seed commercial market, especially OPV seeds in Phase 1, as PRISMA entered Phase 2, the market was hampered by various shocks, including a large seed subsidy program in 2019, the Seroja cyclone in 2021, and the restructuring of government research and development (R&D) agencies in 2022.

In response, many local seed producer partners dropped out of the maize seed business or reverted to solely supplying the government seed subsidy program. With the government restructuring amplifying issues around the availability of parent seeds, starting in 2022, PRISMA prioritised improving the business enabling environment around the commercial seed market for OPVs. While the growth of the maize sector in NTT is still constrained by low private sector capacity, lack of large-scale off-takers, and fluctuations in subsidy allocations. PRISMA's policy engagement work with Bapperida NTT to support the background study for the NTT Regional Medium-Term Development Plan (RPJMD) 2025-2029 is expected to further embed the improvements in the provincial government's budgetary system and priorities and set a supportive foundation for future commercial market growth.

**The 2 key learnings that PRISMA-2 has taken away from working on maize NTT are:**



**Developing thin markets requires working closely with the government.** This is because private sector presence is scarce, and many of the critical supporting roles and services are provided solely by the government, such as parent seed production and seed certification services. Public extension workers are also the frontliners in promoting agri-innovations and disseminating GAP. However, working with the government can be challenging as it requires a paradigm shift, reorienting their thinking away from delivering short-term subsidy programs to a longer-term view around more sustainable solutions by growing the commercial market.



**When partnering with smaller market actors, programs need to be ready for the challenges that come with working with such companies, including higher risks of failure.** It can be difficult to attract national companies or multi-national corporations to expand into thin markets because of the longer timeframe for a return on investment. As a result, this often leaves the program with no choice but to work with smaller local actors that have limited capacity and lower resilience to external shock. Programs may need to provide these actors with additional technical assistance and will need to continuously assess, more so than with partners in more established markets, whether it makes sense to continue pushing forward or whether to take a step back to re-strategise or withdraw support for the partner.

## Sources of Evidence

1. Statistics Indonesia. (2018). *The Result of Inter-census Agricultural Survey of NTT Province (SUTAS 2018): Number of Maize Farming Households*.
2. Statistics Indonesia. (2018). *Indonesian Statistics: Average Maize NTT Productivity*.
3. Statistics Indonesia. (2018). *Indonesian Statistics: Average Maize National Productivity*.
4. Dinas Pertanian dan Ketahanan Pangan Provinsi NTT. *Mendampingi Petani Jagung Menjadi Wirausaha Mandiri di NTT*. YouTube.



Sector

# Mechanisation- Maize



Outreach figures cumulative 24S2



**1,191**  
Beneficiaries



**26%**  
NAIC

## Vision

Smallholder farmers increasingly use agriculture machinery and tools (e.g. maize combine harvesters and planters), resulting in reduced labour costs and improved yields. PRISMA achieves this by supporting machinery companies to promote machine access to smallholder farmers and improve aftersales services.

## Context

Indonesia has 5.5 million hectares of maize fields, with up to 70% of national production coming from East Java, Central Java, and West Nusa Tenggara (NTB).<sup>1</sup> Labour accounts for approximately 50% of total production costs for smallholder maize farmers.<sup>2</sup> Despite having a population of 270 million people, labour shortages is a significant problem for smallholder farmers.<sup>3</sup> Manual planting, harvesting, and land preparation are time-consuming,<sup>4</sup> resulting in input losses and reductions in crop yield and farmers' income. At the same time, aside from 2-wheel tractors, the usage rate of other agricultural machinery in Indonesia is low (e.g. 4% for maize planter).

## Constraints

Maize farmers in Central Java, East Java, and NTB depend heavily on labour during the planting and harvesting seasons. Due to scarce rural labour, farmers experience increased production costs and harvest losses.<sup>5</sup> However, the adoption and use of maize tools and machinery are not widespread due to machinery companies not focusing on this commodity segment. These companies lack strategic insights into how to tap into this market segment.



## Key Achievements



*PRISMA works with great passion towards the progress of our business. Over the past four years of partnership, our collaboration with PRISMA has noticeably strengthened our organisation and expanded our market reach, particularly in areas prioritising maize planting.*

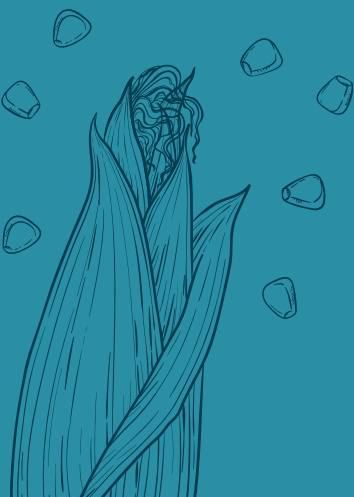
**Mr. Anthony Wijaya,**  
Vice General Manager, PT Galaxy Partani Mas.

After 5 years of PRISMA's engagement, 1,191 farming households have reduced their workload and saved labour costs using maize planters and four-wheel tractors, increasing their incomes by an average of 26%. PRISMA achieved this by working with 7 companies in East and Central Java.

Prior to PRISMA, agri-machinery companies were primarily focused on sales to the government market or large commercial plantations and were not serving the smallholder segment. Now, at least 7 agri-machinery companies nationwide, including 2 PRISMA partners, are offering products such as hand planters, four-wheel tractors, and maize combine harvesters to smallholder farmers. This also includes the 4 largest agri-machinery companies in Indonesia. Previously, agri-machinery companies rarely offered good aftersales services, which impacted the durability and lifespan of these machines. Although it is too early to assess the impact of aftersales improvements on maize farmers, 5 of PRISMA's partners

have progressed in improving their aftersales capacity. These partners are making additional investments in capacity development and marketing activities for aftersales services.

In terms of gender, using maize combine harvesters and hand planters saved around IDR 692,000 and IDR 682,000, respectively, in harvesting costs each season which resulted in increased household income that is typically controlled by women. Consequently, 73% of female farmers reported an increase in money ownership or control of household finances. Furthermore, 59% reported a significant reduction in workload, which allowed them to have more time to conduct household chores or engage in additional income-generating activities (e.g. starting a food stall).



## Reflections/Key Learnings

Overall Phase 2 progress in the sector was as PRISMA projected, although it was slower than mechanisation in rice. This discrepancy can be attributed to agro-machinery companies' lack of experience and suitable products for the maize sector. It's worth noting that all the maize harvesters are designed for use in dry, flat areas, which poses a challenge in Indonesia where maize is often grown in wetlands or sloped areas.

**The two key learnings that PRISMA-2 has taken away from working on mechanisation in maize are:**



**Similar to mechanisation in rice, for high-ticket items, such as large machinery, programs should explore opportunities around service provision models that could benefit smallholder farmers as end users.** While most of PRISMA's partnerships focus on marketing and selling inputs directly to farmers, the cost of large machinery tends to be prohibitive for smallholders. Instead of targeting smallholders as end buyers, programs can enhance smallholder access to and use of mechanisation by promoting and selling machinery to intermediaries (i.e. MSPs) who can afford the machines and provide machinery services to smallholders at a reasonable price.



Rather than introduce new dedicated products, there may be potential to convert existing products (e.g. machinery used for other commodities) to encourage agro-machinery companies to extend their portfolios to new commodities. For example, existing rice harvesters can be converted for use in maize harvesting by introducing additional accessories such as maize headers. While harvest loss is higher when using a convertible option than when compared to a dedicated maize combine harvester, it is still lower than when using manual harvesting. Furthermore, it provides additional benefits in terms of cost and time when compared to manual harvesting.



Ripe corn cobs grown from the drought-tolerant Lamuru seed, ready for harvest, Belu Atambua, NTT.

## Sources of Evidence

1. Statistics Indonesia. (2018). *Maize Harvested Area 2018*.
2. Statistics Indonesia. (2018). *Agricultural Intercensal Survey (SUTAS) 2018*; Statistics Indonesia. (2017). *Maize Farming Production Cost Structure Survey*.
3. Statistics Indonesia. (2022). *Labour in the Agricultural Sector 2012-2021*.
4. Statistics Indonesia. (2017). *Maize Farming Production Cost Structure Survey*.
5. Statistics Indonesia. (2017). *Maize Farming Production Cost Structure Survey*; Mujjadi, M., Hatmoko, D. R., & Fahmi, A. (2023). *Post-harvest handling of corn commodities in Trowulan District, Mojokerto Regency*. *Jurnal Ilmu Pertanian dan Perkebunan*, 5(1), 1-6.



Sector

# Mechanisation- Rice

Outreach figures cumulative 24S2



**73,677**  
Beneficiaries



**17%**  
NAIC

## Vision

Smallholder rice farmers increasingly use agriculture machinery and machinery services (e.g. combine harvesters, drone sprayers), resulting in reduced production costs and harvest losses. PRISMA achieves this by supporting machinery companies to promote machinery access to smallholder farmers, introducing machinery rental services directly to farmers, and improving aftersales services.

## Context

Indonesia has 7.4 million hectares of rice fields, approximately 41% across Java, where smallholder farmers own on average less than half a hectare.<sup>1</sup> Labour accounts for approximately 50% of total production costs for smallholder rice farmers.<sup>2</sup> Despite having a population of 270 million people, labour shortages are a significant problem for smallholder farmers.<sup>3</sup> Manual harvesting is not only costly and time-consuming, but it also results in higher crop losses, thus reducing crop yields and farmers' income. At the same time, aside from 2-wheel tractors, the usage rate of other agricultural machinery in Indonesia is low (e.g. 6.7% for rice combine harvesters).

## Constraints

Smallholder farmers experience at least 14% harvest loss due to manual harvesting.<sup>4</sup> Using manual labour also increases production costs and often leads to lower quality rice grains.<sup>5</sup> Crop maintenance is also another part of the production cycle which involves high workload and costs.<sup>6</sup> However, despite multiple benefits from mechanisation (e.g. from combine harvesters for harvesting to more advanced technologies such as agricultural drone sprayers for crop maintenance), the adoption of mechanised solutions among smallholder farmers is low. This is due to agri-machinery companies focusing on other market segments (government and large plantations) and providing limited or no aftersales support. Agri-machinery companies do not see smallholder farmers as a viable market.

## Key Achievements

After 5 years of PRISMA's engagement, 73,677 farming households have benefited from improved rice mechanisation services, increasing their incomes by an average of 17% through cost savings, better grain quality, and crop loss reduction. PRISMA achieved this by working with 11 agri-machinery companies across 4 provinces.

Prior to PRISMA, agri-machinery companies were primarily focused on sales to the government market or large commercial plantations and were not serving the smallholder segment. Now, 14 agri-machinery companies, including all 11 PRISMA partners, and 132 new machinery service providers (MSPs) are actively serving smallholder rice farmers. Two of these companies, including one PRISMA partner, are now providing full-mechanisation services for the entire production cycle from land preparation to harvesting in several districts in East and Central Java. All PRISMA partners have stated that the improved and well-targeted product marketing activities, such as product demonstration and digital marketing, not only contributed to increased sales in rural areas but also provided a strong foundation for them to continue expansion into emerging areas. Partners have since taken further steps after the PRISMA partnership period to make additional investments and restructure their organisations. At the farmer level, smallholders' adoption of combine harvester services has increased from 6.67% in 2018 to 36% by 2022. Nearly 100% of machinery users expressed satisfaction and a willingness to continue using the service.

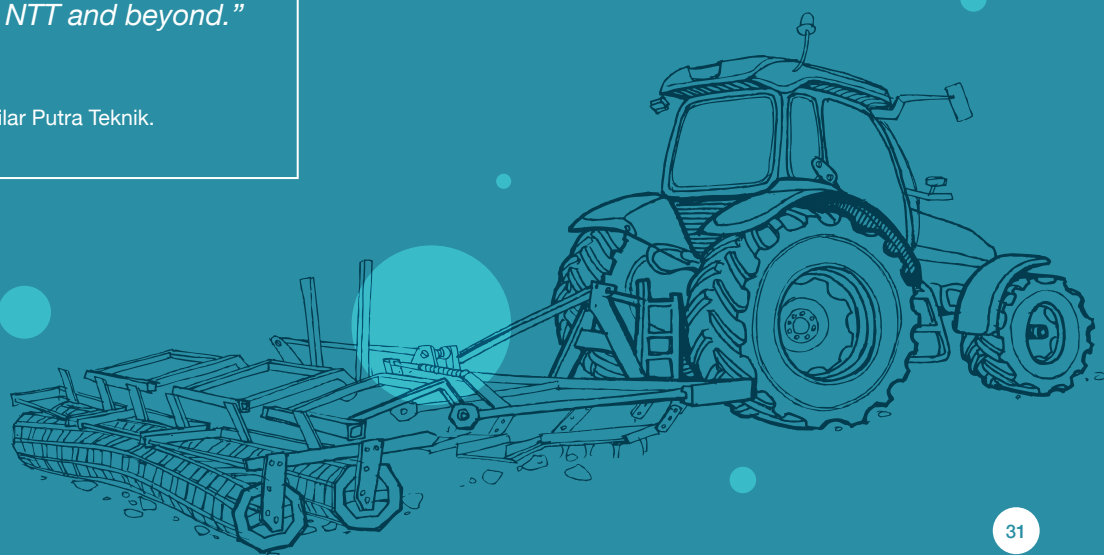
Furthermore, previously, agri-machinery companies and their dealers rarely offered good aftersales service, which affected the durability and lifespan of machines. Although it is too early to assess the impact of aftersales improvements for rice farmers, 5 of PRISMA's partners have progressed in improving their aftersales capacity. They have restructured their aftersales department, invested in digital marketing for aftersales, partnered with local spare part shops, and opened new branches for aftersales services. Some of these partnerships have triggered the emergence of new businesses providing repair services and spare parts. Finally, 2 financial institutions have responded to the growing opportunity in the sector by offering alternative, more flexible loan schemes for agri-machinery.



*At the beginning, PRISMA provided us market trends, data, and insights to inform our decisions before venturing into new areas. PRISMA then supported us in enhancing our internal processes—such as aftersales, market research, and training of trainer. This empowered us to independently expand our presence in NTT and beyond.”*

**Tony Wijaya,**  
Director of PT Pilar Putra Teknik.

In terms of gender, using rice combine harvesters saved around IDR 1,100,000 in harvesting costs each season, which resulted in increased household income that is typically controlled by women. Consequently, almost 75% of female farmers reported an increase in money ownership or control of household finances. Additionally, approximately 90% of female farmers reported a significant reduction in workload as they no longer needed to prepare meals for labourers or collect lost paddy grain.





## Reflections/Key Learnings

Overall Phase 2 progress in the sector was as PRISMA projected, with some geographic areas progressing above expectations. In particular, PRISMA did not expect MSPs in NTT to expand their service as quickly and aggressively as they did and that the combine harvesters could save farmers in NTT from total harvest loss due to pest attacks.

**The two key learnings that PRISMA-2 has taken away from working on mechanisation in rice are:**



**For high-ticket items, such as large machinery, programs should explore opportunities around service provision models that could benefit smallholder farmers as end users.** While most of PRISMA's partnerships focus on marketing and selling inputs directly to farmers, the cost of large machinery tends to be prohibitive for smallholders. Instead of targeting smallholders as end buyers, programs can enhance smallholder access to and use of mechanisation by promoting and selling machinery to intermediaries (i.e. MSPs) who can afford the machines and provide machinery services to smallholders at a reasonable price.



**When introducing newer, more advanced technologies, programs should factor in longer time horizons and higher risks of failure as they will need to spend more time familiarising smallholders with the technology and supporting companies with additional research and trials to identify a viable business model.** Drone spraying technology is an example of a more advanced technology which can significantly improve incomes for smallholders but also one where PRISMA's partners are still struggling to identify a commercially viable business model. Given the nascent stage of the technology, further exploration will be needed to either unlock the potential of drone sprayers for smallholders or to conclude that the technology may not be commercially feasible for the smallholder segment.



Ririn Handayani skillfully operates a combine harvester in a rice field in Banyuwangi, East Java.

## Sources of Evidence

1. Statistics Indonesia. (2019). *Paddy Field Area*.
2. Statistics Indonesia. (2017). *Rice Farming Production Cost Structure Survey*.
3. Statistics Indonesia. (2022). *Labour in the Agricultural Sector 2012-2021*.
4. Qu, X., Kojima, D., Wu, L., & Ando, M. (2021). *The losses in the rice harvest process: A review*. *Sustainability*, 13(17), 9627.
5. Purwantini, T. B., & Susilowati, S. H. (2018). *Dampak penggunaan alat mesin panen terhadap kelembagaan usaha tani padi*. *Analisis Kebijakan Pertanian*, 16(1), 73-88.
6. Statistics Indonesia. (2017). *Rice Farming Production Cost Structure Survey*.

Sector

# Mungbean

Outreach figures cumulative 24S2



**98,572**  
Beneficiaries



**63%**  
NAIC

## Vision

Smallholder mungbean farmers in Central and East Java adopt quality seed and good agricultural practices (GAP) and have increased access to improved off-taking services. PRISMA achieves this by encouraging additional mungbean seed producers to enter the market and by connecting relevant market players to improve the downstream mungbean market.

## Context

Over 609,000 mungbean farmers in Central and East Java contribute 71% of national production.<sup>1</sup> Farmers plant mungbean because it is a low-maintenance and low-cost crop with beneficial soil properties. Despite its importance, mungbean farmers have low productivity of 0.8 tonnes per hectare (ha), well below the potential of 1.5 tonnes/ha.<sup>2</sup> The leading cause of low productivity is the limited use of quality inputs, especially quality seeds.

## Constraints

Mungbean farmers need quality seeds of different varieties and access to higher-value markets. While the government provides subsidised extension seeds to farmers, there is limited availability of subsidised mungbean seeds, which is caused in part by limited production of parent seeds by government research institutes. Meanwhile, the commercial market is underdeveloped as private seed producers lack awareness of the market potential of mungbean seeds. Information mismatches between upstream and downstream actors limit smallholder farmers' access to higher-value markets.

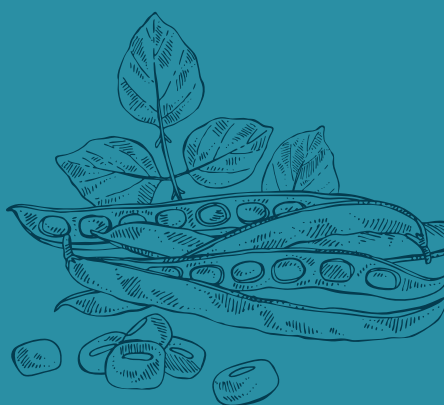


## Key Achievements



*PRISMA opened our eyes to the huge market potential of Indonesian mung bean. Without them, we will still be a small-time player selling in our backyard.*

**Anthony Susilo,**  
Director/Owner, CV Semi.



After 8 years of PRISMA's engagement, 98,572 mungbean farming households have increased their productivity by 47.44% and income by 63%, equivalent to IDR3.01 million (AUD 301) increase per season. PRISMA achieved this by working with 4 mungbean seed producers and 2 government research institutes to develop the commercial market for quality mungbean seeds.

Prior to PRISMA, there was no commercial market for high-yielding mungbean seeds, and government research institutes were not promoting the availability of parent seeds to seed producers. Two government research institutes are now commercialising parent seeds to increase seed propagation, and with PRISMA's support, one partner also collaborated with BALITKABI to develop new mung bean varieties, such as the publicly-owned Vima 2 and Vima 3.<sup>3</sup> PRISMA's partners are expanding their commercial market while also educating smallholder farmers on good mungbean practices. There are now a total of 7 seed companies, including 4 PRISMA partners, across Central and East Java offering high-quality mungbean seeds. Whereas previously only 4.26% of planted mungbeans used quality seeds, obtained through the government subsidy program, 24.8% of planted mungbeans use quality seeds as of 2022. Moreover, 61% of mungbeans farmers are now purchasing quality mungbean seeds.

## Reflections/Key Learnings

Overall Phase 2 progress in the sector was slower than expected. At the beginning of Phase 2, PRISMA aimed to reach over 350,000 farmers in the mungbean sector as part of the ambitious expansion plan of its key partner, a multi-national seed company. However, due to internal restructuring and a shift in focus to other commodities, the partner's plans changed and the target was not achieved. PRISMA faced challenges identifying alternative scale agents that could meet this initial target, which nearly led to PRISMA closing down the sector in 2021. Additionally, external factors such as rat attacks also negatively impacted the sector's performance. Despite slower progress than expected, PRISMA's work in mungbeans remains a significant game changer and the impact is still substantial enough to sustain the innovation.

**The two key learnings that PRISMA-2 has taken away from working on mungbean are:**



**Policy advocacy is not the only way to solve government-related bottlenecks. In some instances, programs may find private solutions that would equally or more effectively alleviate the bottleneck.** Rather than reforming the government seed certification process, PRISMA focused on supporting partners to obtain authority from the government to certify their own mung bean seeds. The availability of parent seed is another government-related bottleneck in the sector. Although parent seeds are typically produced by the government's seed research institute, PRISMA faced difficulties advocating for the institute to increase production of parent seeds.<sup>4</sup> As a result, PRISMA shifted gears and began focusing instead on increasing the supply of parent seeds through private seed companies.



Although the quickest route to scale is often through a large market actor, it is important for programs to consider medium-sized players. For MSD programs, a key strategy for achieving scale is partnering with one or two large companies that have the networks, influence, and incentives to diffuse innovation. In line with this strategy, PRISMA initially envisioned that a multinational company (MNC) could be a scale agent for the mungbean sector, but in the end, it was the medium-sized actors that outperformed the MNC. Not only did the medium-sized players exhibit a higher level of commitment since mungbean seeds constituted a much larger portion of their overall portfolio, but they were also more agile, requiring much shorter lead times for entering a new business or piloting a new approach.<sup>5</sup>



Mung bean farmers in Malaka, NTT.

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## Sector Pig



Outreach figures cumulative 24S2



**162,348**  
Beneficiaries



**377%**  
NAIC

### Vision

Smallholder pig farmers in NTT benefit from increased availability and appropriate use of quality inputs and improved husbandry practices, supported by a conducive regulatory environment. PRISMA achieves this by supporting breeding farms to promote high-quality piglets and artificial insemination (AI) services to smallholder farmers; supporting feed companies to promote good quality pig feed; and improving biosecurity practices and strengthening African Swine Fever (ASF) detection, response, prevention, and recovery in NTT.

### Context

NTT has the largest pig population in Indonesia, contributing to 30% of the national pig population.<sup>1</sup> With an estimated 900,000 households rearing on average two pigs and 70% of smallholders rearing pigs for extra income, pigs are the most important livestock for smallholder farmers in NTT. In late 2019, ASF hit NTT and decimated the pig population, causing a significant decline in farmers' income.

### Constraints

The primary constraint for pig farmers in NTT is the lack of pig stocks. Pig farmers not only need better access to quality breeds but also access to pig health products and information on sound husbandry practices, including farm and breeding management.<sup>2</sup> If farmers do not adopt good animal health practices, the risk of ASF outbreaks will continue. At the same time, trade transactions for pigs and pork products are restricted due to government regulations, which, in turn, limit options for re-stocking.<sup>3</sup>



## Key Achievements

After 10 years of PRISMA's engagement, 162,348 farming households have increased their incomes by 377% from pig farming. PRISMA achieved this by working with 39 partners. Now, approximately 26% of farmers are restocking their farms with high-quality piglets, using concentrate feed, and applying biosecurity measures, leading to lower mortality and higher pig productivity. In contrast, when PRISMA began, nearly all NTT pig farmers were following traditional feed, breeding, and rearing practices. This shift in farming practices has been crucial for ensuring the recovery of smallholder households and NTT's overall pig sector, especially in the face of the damage caused by ASF.<sup>4</sup>

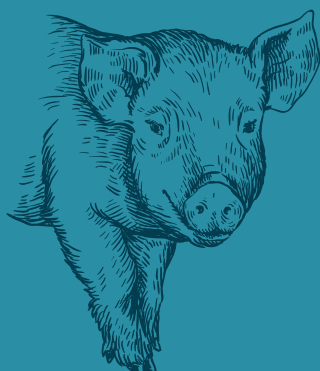
Prior to PRISMA, only 2 or 3 breeding farms provided high-quality piglets, and none offered commercial AI services. Now, high-quality piglets and AI products and services are available in NTT from 14 breeding farms, all of which are PRISMA partners. By expanding into AI, breeding farms are shifting the way that smallholder farmers practice breeding in NTT. Two farms have also installed wastewater treatment plants, which is important for biosecurity and meeting farm water requirements, particularly given NTT's dry climate. They are the first pig farms in NTT to have installed such a technology.<sup>5</sup>

Furthermore, from a baseline of only 2 feed companies distributing pig feed in NTT, 12 feed companies, including 7 PRISMA partners, now sell a variety of affordable pig feeds while also educating farmers on good rearing practices. Independently of PRISMA, partners have taken further steps to expand their distribution network within NTT and also enter new markets, including 5 other provinces and Timor-Leste. Although previously in NTT animal pharma companies were only providing pig pharmaceutical products to government programs and large farms, at least 6 animal pharma companies, including 1 PRISMA partner, are now selling medical products for smallholder pig farmers.



*We would like to thank PRISMA and all involved parties for the efforts to strengthen the capacity of (animal) health officers, launch an awareness campaign about African swine fever, and improve the genetic quality of pig farming through artificial insemination methods. Collectively, these steps enhance the quality and sustainability of the pig farming sector in East Nusa Tenggara Province.*

**Ayodhia Kalake MDC, SH,**  
Acting Governor of NTT.



Finally, another major development supported by PRISMA is how the NTT Animal Husbandry Office is now better equipped to handle disease prevention, detection, and surveillance. Whereas previously tests for animal disease detection could only be done through Bali, NTT can now conduct tests through 3 laboratories on its 3 main islands.<sup>6</sup> It has also introduced LAMP testing as a more cost-effective, faster method for ASF testing and is developing provincial level policies to regulate and expand the use of LAMP tests. In June 2024, the government introduced national standards (SNI) for frozen pig semen and Standard Operating Procedures (SOP) for certifying chilled pig semen for breeding farms. The government has also launched a pig inseminator training curriculum, module, and work competency standards. PRISMA's progress towards building pig sector resilience in NTT has generated interest from MoA for further support from PRISMA around revising the national pig rearing technical guideline.

In terms of gender, using complete or concentrate feed significantly reduced women's workload, reducing the time spent on feeding by approximately 80%. PRISMA also found that women have substantial decision-making influence over the purchase of feed and income increases from pig rearing were used for expenditure categories under their control. Two feed companies, including 1 PRISMA partner, are providing smaller package sizes, which make it more accessible and affordable for women farmers. Furthermore, breeding farms, including 4 PRISMA partners, are being more gender-inclusive by creating opportunities for female inseminators, and there are now at least 24 female inseminators providing AI services.

## Reflections/Key Learnings

Overall Phase 2 progress in the sector exceeded PRISMA's expectations despite how ASF had decimated the pig population and caused a significant decline in farmers' income and demand for feed and pharmaceuticals—2 of PRISMA's main functional areas. In response, in 2020, PRISMA refocused its strategy towards ASF recovery by building and strengthening the breed and animal health management systems through partnerships with the private and public sectors. This has allowed farmers and breeding farms to become more confident with restocking pigs and investing in the sector, resulting in a 26% recovery of the pig sector which is more than PRISMA's internal target of 10%. This has also infused the sector with a new sense of optimism and hope for the future.<sup>7</sup>

**The two key learnings (additional learnings from PRISMA's high priority policy initiative in pigs is featured under Annex 2) that PRISMA-2 has taken away from working on pigs are:**



**In crisis scenarios like ASF, PRISMA needs to react quickly and engage a broad range of stakeholders across the province.** During the ASF outbreak, PRISMA's role was pivotal in initiating a swift response. It fostered a wide-ranging collaboration with stakeholders across the province, including the national and provincial governments. This collective effort was instrumental in triggering a response at lower government and private sector levels. Whether the conversation was initiated by PRISMA or other entities, this proactive approach underscored the importance of a unified front, working hand in hand with the private and public sectors.<sup>8</sup>



**Low-hanging fruits are important, but teams also need to think of medium and long-term strategies to achieve market resilience.** Low-hanging fruits like feed was very effective in reaching many farmers and triggering commercial interest in the NTT pigs sector in Phase 1. However, realising the importance of balancing a short- and longer-term orientation, PRISMA re-engaged breeding farms in Phase 2. As ASF ravaged the province, it soon became evident that unless the sector could secure a supply of ASF-free pigs, other market functions like feed would be pointless.<sup>9</sup>

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Sector

# Rice Seed

Outreach figures cumulative 24S2



**139,154**  
Beneficiaries



**34%**  
NAIC



## Vision

Smallholder rice farmers in Central and East Java adopt high-yielding varieties (HYV) of rice seeds and have increased productivity. PRISMA achieves this by supporting seed producers to produce and promote HYV and by providing evidence-based policy recommendations to encourage the government to boost HYV procurement in its seed subsidy programs.



## Context

Rice, the primary food for over 280 million Indonesians,<sup>1</sup> provides a source of income and employment for more than 3 million rice farming households in the largest rice-producing provinces of Central and East Java.<sup>2</sup> These two provinces encompass approximately 40% of Indonesia's rice harvested areas.<sup>3</sup>



## Constraints

Indonesia's rice productivity has stagnated at around 5.1 tonnes/hectare in the past few years.<sup>4</sup> While many variables contribute to productivity, better quality seeds play a significant role in Indonesia's journey towards higher rice production. The constraints for smallholder farmers lie in gaining greater knowledge and access to HYV. The obstacles are exacerbated by the inadequate supply of HYV seeds and insufficient government support for accelerating the adoption of such varieties within government programs.<sup>5</sup>



## Key Achievements

After 5 years of PRISMA's engagement, 139,154 farming households have adopted high-yielding rice seed varieties. This has resulted in a 34% increase in yields, which is equivalent to an annual income boost of IDR2.28 million (AUD228). PRISMA achieved this by collaborating with 5 seed companies to produce and promote over 2,400 tonnes of high-yielding rice seeds.



*With PRISMA support, we enhanced seed production and educated farmers on the benefits of using hybrid rice seeds. Initially, hybrid seeds had a bad image among farmers. Today, we have sold all our stock.*

**Ayub Darmanto**, Director of PT Agrosid Manunggal Sentosa.

Prior to PRISMA, seed companies were reluctant to increase their high-yielding seed production, but now at least 6 seed companies, including all 5 PRISMA partners, have increased their production. Not only has the supply of HYV seeds from PRISMA partners increased by twofold, but partners are also developing and introducing new varieties of HYV rice seeds, including climate-smart seeds that are drought tolerant and require less fertiliser and water.<sup>6</sup> With PRISMA's support, partners have expanded to new markets in Central and East Java and implemented inclusive approaches targeting women farmers and farmers with disabilities. PRISMA partners have also expanded their reach to 9 provinces beyond the initial partnership areas and are repurposing production waste into bio-fertiliser to reduce greenhouse gas emissions. At the farmer level, farmers have expressed high levels of satisfaction and retention, with 87% intending to continue using HYV rice seeds in the future.

## Reflections/Key Learnings

Overall Phase 2 progress in the sector was as PRISMA projected. As a result of Covid-19 and political sensitivities around working on rice, there were some initial delays in getting the sector off the ground. Over time, the sector gained traction as PRISMA transitioned from a sole focus on hybrid seeds to a broader focus on HYV. This allowed PRISMA to bring on board several new partners, who had strong buy-in and alignment with PRISMA's innovative approach of introducing HYV seeds to farmers. While PRISMA's policy efforts have yet to result in any changes to the adoption of HYV in government programs, this did not hinder progress since HYV could still be promoted through commercial channels.

**The two key learnings that PRISMA-2 has taken away from working on rice seeds are:**



**Even in highly politicised sectors there may be scope for MSD programs to engage.** In every country, there are bound to be sectors with high levels of government engagement, which may be considered as politically sensitive by donors. However, instead of shying away from such a sector, MSD programs should first analyse the sector, including the political landscape, and formulate a clear assessment of the potential risks and opportunities. Only then is it possible to make an informed decision of whether or not to enter a sector and how best to engage in the sector (e.g. working on increasing productivity through better seeds could be a neutral entry point whereas lobbying for changes to price or trade policies would likely be a minefield).



Universities can be a potential entry point for MSD programs. They often have relevant technologies and innovations but lack the business acumen and expertise to commercialise market-ready products. One of PRISMA's partners, PT Botani, is a classic example of a university-established company with limited experience in running a commercial business but interesting innovations that are marketable and attractive to potential consumers. Botani needed support to help it move from a research mindset to a business one and to build capacity in commercial sales and marketing. This was precisely the support that PRISMA provided Botani, with the collaboration resulting in Botani significantly increasing its commercial sales and expanding its production by over threefold within two years.



Launch of Botani - Climate Smart Seed IPB9G in Lamongan, advancing sustainable agriculture for a climate-resilient future.

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Sector

# Soil Treatment

Outreach figures cumulative 24S2



**280,610**  
Beneficiaries



**50%**  
NAIC

## Vision

Staple, horticulture, and estate crop farmers in Central Java, East Java, and West Nusa Tenggara (NTB) have access to and safely use quality fertiliser. PRISMA achieves this by supporting private and state-owned fertiliser producers to offer a variety of fertilisers (both organic and chemical) through innovative marketing and promotional strategies that incorporate accessible information on good fertiliser practices (GFP).

## Context

With around 22 million farmers, Indonesia is one of the largest fertiliser consumers in the world. Indonesia needs on average 38.3 million tonnes of fertilisers but can only supply around 26 million tonnes, of which 40% is provided through government subsidised fertilisers.<sup>1</sup> Primarily due to farmers' reliance on and overuse of chemical fertilisers, such as urea, approximately 70% of agricultural land in Indonesia is in a degraded and unhealthy state.<sup>2</sup> As a result, since 2023, the government is paying more attention to promoting the use and benefit of organic fertilisers to farmers through a national organic fertiliser program and policies.<sup>3</sup> Approximately 77% of the fertiliser (9.2 tonnes) needed by farmers is organic. However, the national production capacity of organic fertiliser is only 1.5 million tonnes.<sup>4</sup>

## Constraints

Major constraints in the sector include: (1) limited and untimely supply of subsidised fertiliser; (2) limited supply of good quality commercial fertiliser (especially organic), as fertiliser producers are hesitant to invest in market expansion due to a lack of reliable market intelligence and the prevalence of subsidised fertiliser; and (3) farmers' lack of awareness of the benefits and correct application of quality fertiliser. These constraints have been exacerbated by increasing global fertiliser prices due to the ongoing Russia-Ukraine conflict.<sup>5</sup>



## Key Achievements



*PRISMA supported ATS in increasing the capacity of its staff, designing innovative promotional activities, and expanding into new areas, including collaborating with local governments. These activities have positively impacted the performance of ATS businesses and farmers. After the partnership, ATS will continue using this model for business.*

**Sunaryo,**  
National Manager at PT Agrotama  
Tunas Sarana (ATS).



After 5 years of PRISMA's engagement, 280,610 farming households have benefitted from using good-quality fertilisers and applying good fertiliser practices, increasing their incomes by 50% or IDR6.45 million (AUD645) per season. PRISMA achieved this by working with 8 companies to develop the commercial fertiliser market.

Prior to PRISMA, most companies, including the 5 state-owned enterprises (SOEs), were focused solely on serving the plantation and government subsidy market and were providing limited information on GFP to farmers.<sup>6</sup> Now, farmers can access commercial fertilisers through 330 kiosks in Central and East Java and NTB, and 11 companies, including 8 PRISMA partners, are actively promoting commercial fertilisers with embedded information on GFP. Private fertiliser companies are continuing to independently expand their market through larger agent networks and improved marketing and promotional approaches. SOEs have also adopted this approach and modified it to suit their needs. Over 30 agri-service providers (finance, insurance, trader, and off-takers) work closely with fertiliser companies under a partnership model to offer enhanced products and services to farmers. At the farmer level, users of new fertiliser products are highly satisfied, with nearly 95% making repeat purchases. Farmers are also becoming more efficient in the use of higher quality products.

## Reflections/Key Learnings

Overall Phase 2 progress in the sector was as PRISMA projected. While the commercial fertiliser market faced significant challenges in recent years (e.g. due to changes in subsidy policy, fluctuating fertiliser prices, and increasing concerns about the use of chemical fertiliser),<sup>7</sup> PRISMA maintained momentum in the sector by spreading its focus between both chemical and organic fertilisers, capitalising on the government's push around organic fertilisers.

**The two key learnings that PRISMA-2 has taken away from working on soil treatment are:**



Although PRISMA has worked on bringing about improvements in the government subsidy process in other sectors (i.e. seeds), there won't always be an entry point depending on the agri-input. In Indonesia, fertiliser subsidies are much more complex and heavily regulated than seeds.<sup>8</sup> At the same time, fertilisers constitute a much larger share of farmers' production costs, with many farmers heavily reliant on subsidised fertilisers.<sup>9</sup> As a result of these differences, there's much stronger political resistance around reforming fertiliser subsidies. This shows how important it is to understand the policies, political interests, and also farmers' behaviour and relationship around specific agri-inputs when assessing whether there is a window to engage the government on the subsidy process.



Market systems programs should not automatically exclude government dominated sectors or SOEs. Although difficulties may exist when working in sectors where the government is heavy-handed, these are not to be discounted at face value. When assessing the risks and opportunities, there may be aligned incentives to work with these entities. For example, one SOE was under significant pressure to diversify their revenue streams due to the decreasing budget allocation for subsidised fertiliser. At the same time, they had a dedicated partnership manager whose role was to find partners for business expansion and coordinate internal departments to ensure smooth collaborations. All these factors combined made it relatively easy for PRISMA to develop a partnership with this SOE.



Fathur (right) serves a customer in his kiosk in Plemahan, Kediri.

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Sector

# Vegetables Tanah Papua

Outreach figures cumulative 24S2



**9,759**  
Beneficiaries



**13%**  
NAIC

## Vision

Smallholder farmers in Tanah Papua use quality seeds, apply good agricultural practices (GAP), and have access to the downstream market. PRISMA achieves this by supporting seed companies to promote and distribute quality vegetable seeds suitable for the topography in Tanah Papua with embedded information on GAP and offtakers to increase the absorption of local produce.

## Context

In Tanah Papua, there are approximately 176,000 farming households, with 98% growing seasonal vegetables.<sup>1</sup> The majority of these households (85%) are indigenous, with the remaining 15% consisting of transmigrant farmers.<sup>2</sup> Most indigenous vegetable farmers are engaged in subsistence farming, and women play a critical role in vegetable production activities, including preparing the land, buying inputs, caring for crops, and even harvesting and selling the produce.

## Constraints

The quantity of vegetables produced in Tanah Papua is less than half of the total demand of 180,000 tonnes. The large supply-demand gap can be attributed to farmers' suboptimal yields from the use of low-quality inputs, inadequate adherence to GAP, and the lack of access to market information. These challenges are particularly pronounced in indigenous communities. Moreover, agri-input companies face large hurdles in fully grasping the market potential and local dynamics, which, in turn, impacts their willingness to invest in the region. Limited logistics options further impede the supply chain, adding challenges to the overall distribution process.



## Key Achievements



*PRISMA has been instrumental in providing us with critical insights into the agricultural landscape and ethnographic nuances of Tanah Papua. In less than three years, we went from no business to actively marketing our commercial seed in five areas. Moving forward, we hope for the support from local government to further expand our operations.*

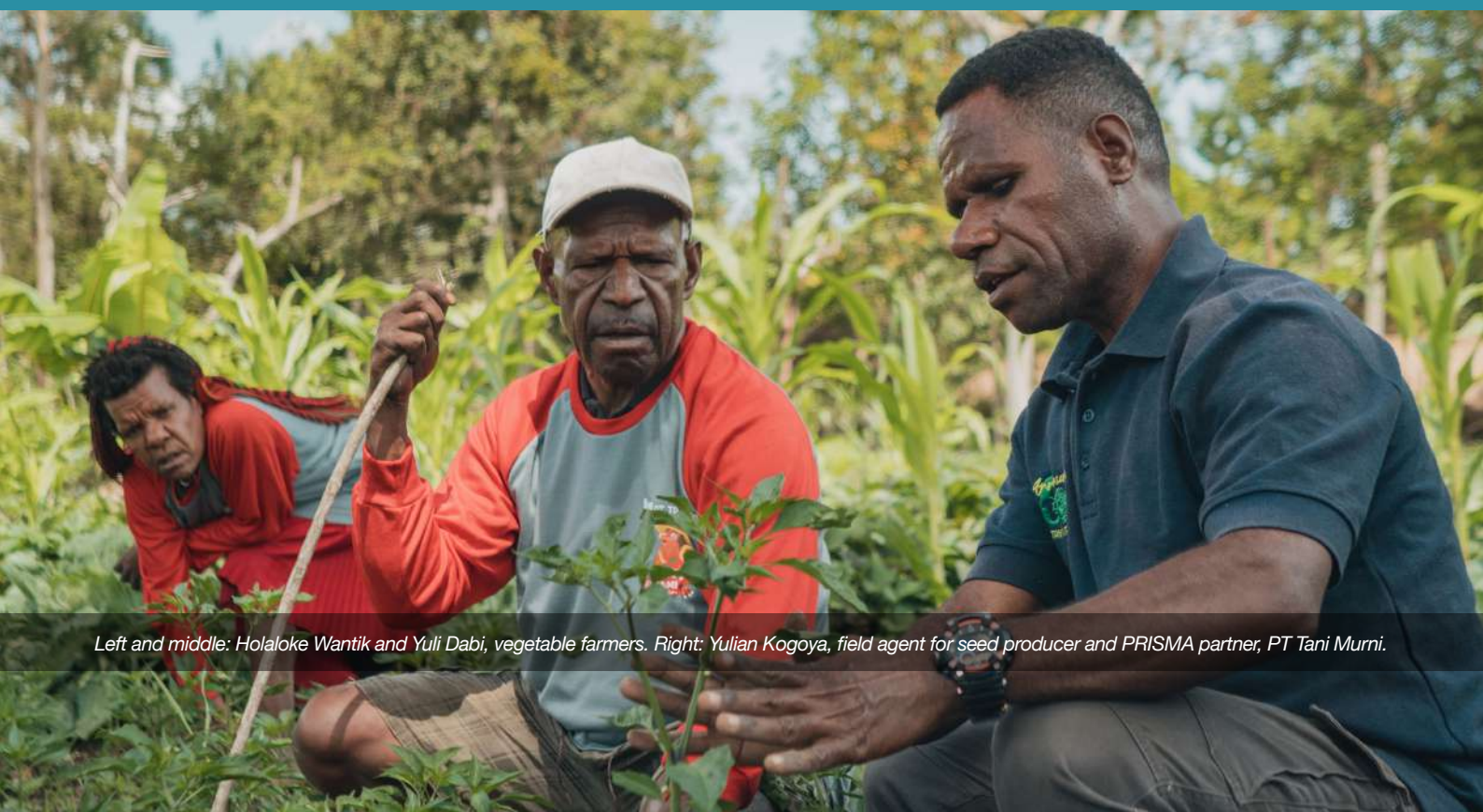
**Ayub Darmanto,**  
Director of PT Agrosid Manunggal Sentosa.

After 7 years of PRISMA's engagement, 9,759 farming households in Tanah Papua have increased their income by 13%, which is equivalent to an annual income boost of IDR3.23 million (AUD323). PRISMA achieved this by collaborating with 4 partners.

Prior to PRISMA, there were no seed companies selling quality vegetable seeds directly in Tanah Papua. Now, 3 of PRISMA's seed partners have established direct distribution channels and are actively promoting GAP in Tanah Papua. PRISMA's partners have showcased a commitment to local engagement by hiring indigenous and non-indigenous local field staff while also aligning marketing tools and strategies with the local context. With a steady rise in sales facilitated by 5 active distributors, PRISMA's seed partners are expanding into new areas. They have also attracted 2 other seed companies to crowd-in and adopt similar business practices (e.g. hiring local field staff, selling directly to distributors in Tanah Papua). At the farmer level, 66% of those who have benefitted from PRISMA's innovations are satisfied with the results from using partner seed products.

Simultaneously, PRISMA is collaborating with an indigenous-owned greengrocer to improve access to markets for farmers and bolster market resiliency. Currently, PRISMA's off-taking partner has established local collection points and is actively providing market information and post-harvest handling knowledge to indigenous farmers, particularly women in West Papua province. Early results show that 3 out of 5 farmers interviewed showed interest in the model provided by the offtaker.

Moreover, there are now signs of local government interest in collaborating with the private sector to grow the vegetable sector. For instance, the Village Community Empowerment Agency (DPMK) of Manokwari initiated a collaboration with PRISMA's off-taking and seed partners to implement a tri-partite collaboration to resolve indigenous farmers' access to quality seeds, GAP assistance, and off-taking services.



Left and middle: Holaloke Wantik and Yuli Dabi, vegetable farmers. Right: Yulian Kogoya, field agent for seed producer and PRISMA partner, PT Tani Murni.

## Reflections/Key Learnings

Overall Phase 2 progress in the sector was as projected, although it initially took some time for the sector to take off and the team had to revise its expectations. At the beginning, there were delays due to security concerns and Covid-19 restrictions. This was followed by delays in recruiting partner field staff. In 2021, the vegetable sector had a strategy reset during which expectations were re-assessed and right-sized. With more realistic targets and the acquisition of new partners, the sector has since seen steady growth and wider market uptake.

The two key learnings that PRISMA-2 has taken away from working on vegetables in Tanah Papua are:



**Understanding the differences among farmer segments and applying tailored indigenously inclusive approaches is crucial for enhancing productivity and engagement in Tanah Papua's agricultural sector.** PRISMA's recent study identifies four farmer segments in Tanah Papua: traditional indigenous, semi-modern indigenous, modern indigenous, and transmigrant farmers. These segments differ in cultivation techniques, crop types, agricultural inputs, scale of business, market access, and information technology use. Effective strategies can leverage these differences to boost agricultural growth in the region.



**Working on indigenous inclusion does not necessarily mean having to work only with indigenous populations.** PRISMA found that the easiest way to introduce a new innovation to lowland indigenous farmers was by first working with transmigrant farmers as early adopters. These demoplots have triggered interest from indigenous farmers in the community, who tend to be more willing to try an innovation once they have seen some positive results. Such an approach can also make it more attractive for businesses to target indigenous farmers since this strategy would allow a company to start turning a profit and spread its risks as it explores how to tap into the large potential market of indigenous farmers.

## Sources of Evidence

1. Statistics Indonesia. (2018). *Number of horticultural farming households by district and crop group 2018*.
2. Arifin, E. N., Ananta, A., Wilujeng Wahyu Utami, D. R., Budi Handayani, N., & Pramono, A. (2015). *Quantifying Indonesia's Ethnic Diversity: Statistics at National, Provincial, and District levels*. *Asian Population Studies*, 11(3), 233-256.




## Learn more



To learn more about PRISMA and its legacy, you can find the **Legacy Impact Brief – Policy** and **PRISMA farmer stories** on the PRISMA website: [www.aip-prisma.or.id](http://www.aip-prisma.or.id).

# PRISMA

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 Jl. Margorejo Indah I blok  
A-535, Surabaya 60238,  
Indonesia

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 [info@aip-prisma.or.id](mailto:info@aip-prisma.or.id)

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 +62 31 8420473

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