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Learning from Public Research-Private Sector Partnerships in ARISA

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Introduction

The Applied Research and Innovation Systems in Agriculture project (ARISA) started in December 2014 with the aim of increasing net farm income for 10,000 smallholder farming households in eastern Indonesia. The project was designed to address a key challenge in agricultural research for development: how to ensure that proven research outputs¹ are available and accessible for use in farming communities. One strategy to overcome this challenge is for research institutes (RIs) and the private sector (PS) to form partnerships and work together to solve technical and institutional challenges to support effective and sustainable rural development. This approach complemented AIP-Rural's² over-arching design, which is to engage with the private sector, and use a market systems development pathway to improve the livelihoods of smallholder farming households in eastern Indonesia. At the same time, ARISA designed research activities to support improved understanding of RI-PS partnerships and derive broader lessons for those undertaking similar programs.

Using a partnership-based approach, ARISA established eight interventions in East Java which sought to stimulate innovation and support the livelihoods of poor farming households in the region. Partnerships were designed to bring together researchers who had worked on approaches to improving agricultural production with private sector partners, and with an interest in supporting farmers to gain access to this information, while addressing broader systemic barriers and constraints to sustainable change. This report focuses on five RI-PS partnerships. Each partnership was identified through an expression of interest or brokering process, and received modest financial and capacity building support from ARISA to address key production and processing challenges. The five partnerships involved:

- *Addressing production and finance constraints in maize-pulse intercropping in Lombok.* This partnership combined the technical expertise of the University of Mataram (UNRAM) with the agri input supplier Syngenta, and linked smallholder farming households to affordable loans through Bank NTB. Partners contributed to improved household knowledge and practices in maize-pulse production, and supported affordable and timely access to high quality inputs to improve household production and income.
- *Connecting cassava producers and community-processing clusters with a modified cassava flour (MOCAF) manufacturer in Java.* The University of Jember (UNEJ) pioneered technology (enzymes) for cassava processing as well as experimenting with other integrated activities (animal feed, biogas), while local investors and MOCAF producer PT BCM ensured the availability of resources and markets for cassava.

1 Including knowledge, practices and technologies to support improvements along the value chain.

2 Australia-Indonesia Partnership for Rural Economic Development. ARISA was one of four in AIP-Rural's suite of programs: Promoting Rural Income through Support for Markets in Agriculture (PRISMA); Strengthening Agricultural Finance in Rural Areas (SAFIRA), and Tertiary Irrigation Technical Assistance (TIRTA).

- *Improving animal growth rates and quality in beef production in Sumbawa.* UNRAM³ supported changed farmer practices in cattle fattening from free grazing to leucaena-based feeding systems using animal pens. Originally linked to a Jakarta-based processing company which planned to develop niche markets for 'herbal beef', the partnership was reoriented towards local traders and facilitating more transparent markets to ensure better prices for farmers.
- *Supporting improved dairy production in Malang.* Nestlé worked with the University of Brawijaya (UB) to experiment with different feeding options for improved milk supply and help facilitate the establishment of fodder production businesses. Nestlé included results from forage growing and feeding trials as part of their broader package of information and guidance to dairy cooperatives.
- *Supporting the Government of Indonesia to improve sugar production.* The Indonesian Sugar Research Institute (ISRI), a state-owned sugar processor PTPN X, and later the processor PT GMM worked to foster land use change by promoting sugar as a secondary crop on Madura Island as part of government targets to improve sugar production.

Social scientists within the ARISA team traced the process and evolution of these partnerships as part of the program's research agenda, from their establishment to the close of the project. Data-capturing perspectives on the partnerships (including expectations, roles, values, key events, and challenges and how to navigate them) were collected from the different partners during interviews, workshop discussions and monthly reports. ARISA summarised these insights in the form of short case studies, which RI and private sector partners checked to ensure there was no misrepresentation of views.

This study analyses these case studies with two questions in mind:

1. What do the case studies tell us about the dynamics of RI-PS partnerships in Indonesia? and
2. How can this understanding inform future efforts to support RI-PS partnerships for inclusive innovation in Indonesia?

These questions are important given the current focus of the Australian aid program on promoting private sector engagement and growth as part of achieving development outcomes. The research provides an opportunity to better understand the dynamics of these types of partnerships, and provides insights into what broader systemic changes, skills and capabilities, are required to maximise their contribution to rural development.

Rationale for a partnership approach

All too often, research outputs which have been demonstrated to improve production and livelihoods fail to spread beyond project timeframes and geographies. This is frequently due to systemic barriers, including producers' poor access to markets for inputs or sale of goods, or lack of household capital and access to affordable finance to support investment in new technology⁴. One way to address this is to encourage partnerships between public agricultural RIs and the private sector, as the resulting combination of skills may offer the potential for greater impact than would be possible in isolation (Spielman and von Grebmer 2006). The motivation for a private sector organisation to engage in such a partnership may include the promise of access to new technology, the chance to enhance its public image by having an active corporate social responsibility program, and improvements in market access and coverage which are beneficial to the company (Ibid). For RIs, such partnerships provide (1) the opportunity to support the greater use (and the likely increased impact) of their research, (2) demand signals for priority setting, and (3) potentially, new sources of funding (Hall 2006).

ARISA's partnership rationale stems from two different but complementary approaches: making markets work for the poor (M4P) (Tschumi and Hagan 2008) and agricultural innovation systems (Hall 2002). Both approaches emphasise institutional arrangements and institutional change as a critical part of the sustainable development process. In the case of M4P, importance is given to leveraging the role of markets and successful business models to drive and scale sustainable change; this is seen as an antidote to projects which rely on government taking on resource-intensive roles to sustain project impacts after projects have finished (Albu 2008). In the case of agricultural innovation systems, a critical focus is the strengthening of partnerships among public and private sector actors. Partnerships are important because they help connect knowledge, technology users

³ UNRAM researchers were team members in the maize and beef partnerships that ARISA facilitated.

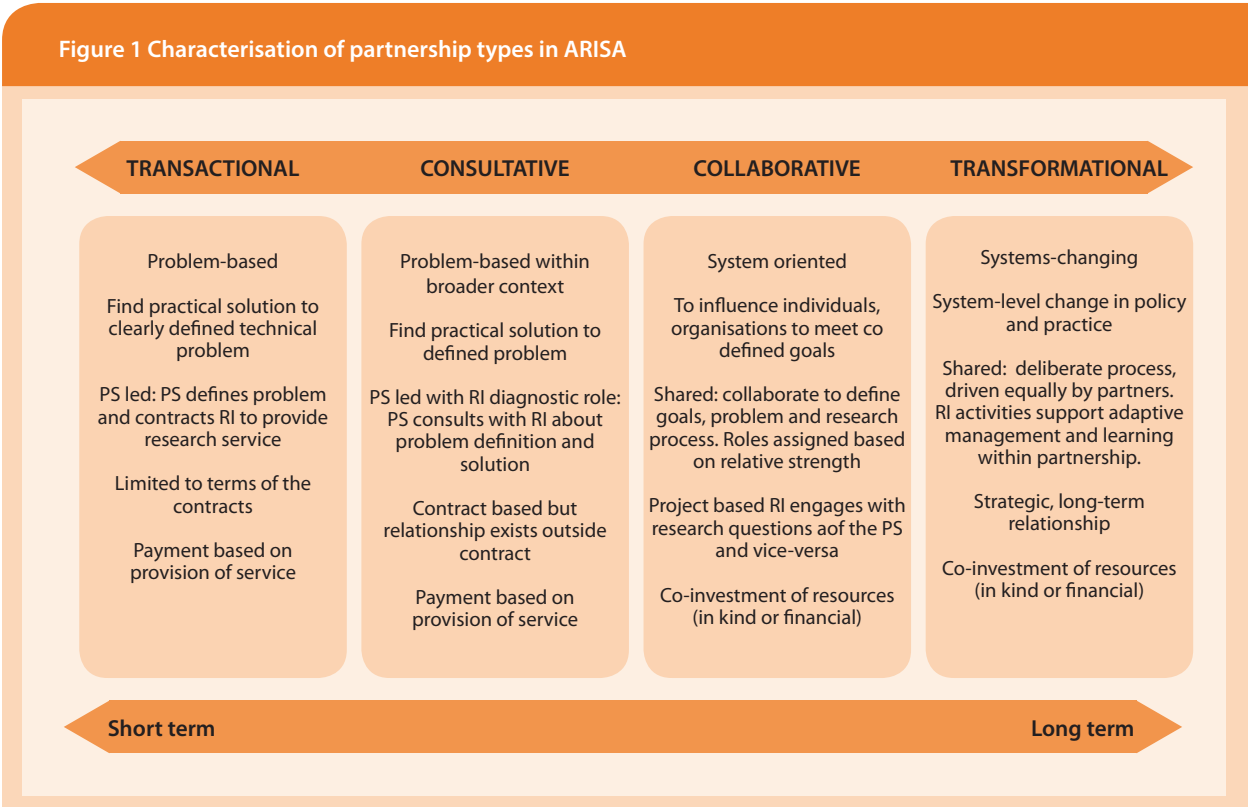
⁴ A range of factors affects the extent to which research findings are used in daily practice, including appropriateness and relevance of technology, and whether it addresses key constraints as perceived by end users (see Pannell et al 2006). This study focuses on market-based challenges, as this is the primary motivation for involving the private sector, and the key focus of ARISA and AIP-Rural.

and producers. They also help in the development of institutional innovations which allow the use of new technology (such as changes in market behaviour, skills and incentives, and enabling policy environments), all of which can enable or constrain innovation (Hall 2006, World Bank 2012).

ARISA RI-PS partnerships

ARISA took a partnership brokering approach to supporting the RI-PS partnerships that were funded as part of the program. In taking this approach, the program acknowledged the need to build skills and capacity within the RIs to enable them to become more outward-facing, to understand business priorities and needs, and better position their research to ensure impact with the private sector (Cosijn et al., 2018). At the same time, the brokering approach aimed to support any private sector partners to understand the value of research in supporting new market opportunities.

Formal mechanisms to support partnerships included partnership agreements and progress reviews, as well as the development of business models and results chains (see Cosijn et al., 2018 for more detail). Informally, the ARISA team played a key role in identifying challenges or tensions, supporting RIs to identify and approach new private sector partners when necessary, and fostering a better mutual understanding between partners. This role diminished over time as partner confidence and experience grew, and RIs were able to take a lead on these activities themselves.



As part of the program’s broader monitoring, evaluation and learning system, ARISA developed a framework to characterise the types of partnership within the project (Figure 1). This typology was used to understand the quality of the partnerships, and to evaluate how the partners understood the nature and purpose of the partnership they were engaged in. ARISA’s initial Theory of Change aimed to encourage all partnerships toward assuming a collaborative or transformational mode. Although most RI partners have demonstrated the capacity to work in collaborative partnerships, ARISA’s experience has highlighted that if the focus of the project is weighted toward achieving impact targets, transactional partnerships can be sufficient. A key lesson which has emerged from ARISA is that a diversity of partnership approaches is required to address different challenges. It is worth noting that collaborative and transformational partnerships take much longer to develop than ARISA’s short-term, two- to three-year timeframe.

Research institute-Private sector partnerships: ARISA and the Indonesian context

The original ARISA design downplayed the involvement of government in the partnerships it was aiming to establish, consistent with the M4P focus on shifting away from government-dependent (and therefore unsustainable) service delivery roles (Tschumi and Hagan 2008). The original design also assumed a degree of existing capacity within both the RIs and private sector to partner effectively. Neither of these assumptions were entirely appropriate for the Indonesian context.

Characteristics of the Indonesian private sector

In Indonesia in 2016, micro- and small enterprises made up 98.3 per cent of businesses and contributed to 78.3 per cent of total employment (BPS 2016)⁵. Indonesian micro- and small enterprises are mostly agricultural businesses characterised by low productivity, with low value-added goods sold at the local market (Tambunan, 2011). Common constraints for small and micro enterprise in Indonesia across all sectors include lack of capital, limited access to information, technology and skills, poor marketing and distribution, and uncondusive government policy and regulation (Tambunan, 2011).

In Indonesia, micro- and small enterprises could benefit greatly from access to the improved information and technology offered by research institutes. However, their limited resources and capacity leave them poorly placed to take advantage of such opportunities. They have no financial capacity to co-contribute to research, and are unable to take the risk which developing a new approach or technology entails. The micro- and small enterprise sector has weak capability either to manage technological change or to engage in research-based partnerships, and this is particularly so in the agribusiness sector (Voeten et al., 2016; Cirera and Maloney 2017). At the same time, while large companies might be better positioned to partner, they are also more likely to have in-house research capacity.

Geographically, fifty-five per cent of all enterprises are concentrated on the main island of Java (17.5% in East Java; 17.4% in West Java; 15.6% in Central Java and 4.6% in Jakarta (BPS 2016). This leaves regional universities outside Java with limited options to engage with private sector partners, especially with medium or large businesses which would be better positioned to do so.

In some cases, this presents an opportunity for RI-PS partnership. For example, under ARISA's maize partnership, Syngenta was able to grow its business activities in Nusa Tenggara Barat. However, in the sugar and beef partnerships, located on Madura Island and Sumbawa respectively, the lack of locally based companies having the capacity to partner limited RI options when the original private sector partner reduced its involvement.

Influence of government

From the national to the district level, the Government of Indonesia had a strong influence, both direct and indirect, on the partnerships which ARISA facilitated. At the national level, Indonesia's interventionist approach to commodity markets (including import, export and commodity pricing) had mixed results for ARISA. For example, in the maize partnership, the government decision to set a minimum base price and manage maize imports established advantageous conditions and incentives for the partnership's growth. In the beef partnership however, government decisions allowing imports of boxed meat from India and setting maximum beef prices saw the private sector effectively withdraw from partnership activities. Such decisions and their impacts were swift, and created conditions which made it difficult to foster 'sustainable' market-based interventions, such as M4P approaches expect.

At the local level, government decentralisation in Indonesia has transferred responsibility for service provision (including that of agricultural extension) to provincial and district governments. Given this, and their autonomy in planning and budgeting, local governments have been common partners for universities seeking to use research findings to inform, refine and improve extension programs and support scale out. As such, researchers are often well-connected with provincial and district government networks.

M4P approaches experience a degree of unease regarding the direct role of government actors in interventions, with government service provision seen as creating unsustainable dependencies (Albu 2008). Consistent with this approach and guided by AIP-Rural, ARISA's initial design did not directly include government as a key partner,

⁵ Micro- and small businesses (*usaha mikro kecil*, or *UMK*) are those defined as having a workforce of less than 10 people and with a value of less than IDR 500 mio (approx. AUD 50,000). Large and medium enterprises (*usaha menengah besar*, or *UMB*) are defined as having a workforce of more than 10 people and a net worth greater than IDR 500 mio.

notwithstanding the practical realities and central role that the Indonesian government plays in agriculture and rural development. However, in the maize and beef case studies, local government has proved to be an important champion and contributed to dissemination of the technologies, beyond the reach of private sector partners.

Key features and dynamics of the partnerships

Box 1 provides a basic narrative of each of the ARISA partnerships and their key developments. Except for the intervention in dairy, RIs led each partnership, and had primary responsibility for the coordination and implementation of activities. For this reason, and because of challenges in arranging meetings with private sector partners, the ARISA team's engagement with partners was more often via the RI rather than the private sector, with the majority of capacity building and engagement activities occurring with the RIs.

Starting expectations and motivations

Except for UNEJ and ISRI⁶, the ARISA RI teams had limited experience of working with the private sector, usually in the form of an individual researcher being contracted (and endorsed by the university) for provision of specifically defined services, such as environmental impact assessment.

The process facilitated by ARISA to understand how partners could work together, and build understanding of the values and motivations of the different partners, was novel for researchers who had previously focused on the merits of their science. RIs were wary of how to balance the profit-based priorities of the private sector with their own goals for community development; at the same time, however, they saw the potential of the private sector to accelerate the dissemination of the information and practices demonstrated by their research. The impact results—which many of the researchers thought could not be achieved—support this view (Table 1).

The private sector partners were motivated to join the partnership primarily by the potential to increase their sales and profit. The reputation of the RIs represented an opportunity to build trust in the private sector brand within the community, and either increase sales (maize) or improve local access to quality produce (cassava, beef, dairy, sugar).

6 In the cassava intervention, the lead researcher at UNEJ fostered links with companies over more than 10 years, linking farmers, community investors and processing clusters with a MOCAF producer. As a former public research agency, ISRI has a long history of provision of research to the sugar industry. However, the 2010 privatisation of ISRI forced a renegotiation of how it works with the private sector.



The partnership process required ongoing learning for all parties as they navigated different priorities, reacted to changed conditions, and negotiated new solutions as their understanding of the challenges and constraints deepened.

Market dynamics and risks

As partnerships progressed, different types of risk emerged and were experienced by partners differently. This was particularly the case in ARISA's maize, beef and sugar interventions, where private sector partners reduced their involvement or withdrew altogether due to changes in company strategy and in response to changing commodity prices. In these cases, the RIs tended to bear more reputational risks than the other partners, having introduced the private sector organisation as a trusted partner to the community in good faith.

For example, when ACS withdrew from the maize partnership, farmers lost both a source of credit for inputs and the guaranteed purchase of their product. As a result, UNRAM faced significant reputational risk if alternatives could not be found, while risks to Syngenta and ACS (financial or otherwise) were limited. Bank NTB stepped in to provide loans; however, its commercial risk is partially covered by the government (which provides some guarantee of loans, and subsidises the interest rate), and partially mitigated by UNRAM, which works closely with farmers to ensure loan repayment.⁷

To mitigate reputational risk, RIs either found additional partners or replaced inactive partners altogether. In the beef intervention, local traders became a key private sector partner after PT Dharma withdrew. Traders are highly competitive and agile, and comfortable with small profit margins, although at the same time tending to be less interested in a project's overall community benefit goals. UNRAM experiments were designed to demonstrate the benefits of the technology to traders (or example, the maintenance of livestock weight during transport) and have had some degree of success, especially in the cases where traders are also fattening cattle themselves.

Given ARISA and AIP-Rural's broader goals of supporting poor farmers, partnerships which result in greater market participation and exposure necessarily bring with them greater risks for farmers, particularly in the context of unpredictable markets and variable weather conditions. For example, given the degree of climate risk in North and East Lombok, farmers taking out loans for maize inputs also expose themselves to financial risk. Further consideration of how best to manage some of these different risks (for example, through micro-insurance) should be a core consideration of project design.

⁷ Some repayment issues nevertheless occurred; however, these issues have been closely managed to minimise losses. It is notable that these are remote communities, far from bank branches, and have had no access to banks in the past. A process of learning and capacity building is required, both for recipients (who may have never visited a bank or had a loan, and whose understanding of the implications of taking out a loan may be limited) and for banks (who have a limited presence in remote areas to disperse and collect loans, and who may not adequately understand the farming household conditions).



Sugar—ISRI, PTPN X, PT GMM. This partnership aimed at increasing production of sugar on Madura Island through the provision of training, credit, inputs and improved market linkages. The original intent of the partnership was to increase sugarcane grown on the island to the point where it would become viable for PTPN X to build a mill on the island, reducing costs and quality losses incurred by transporting harvested cane to mainland Java. However, PTPN X has since abandoned these plans and largely withdrawn its office from the island due to low prices and slow uptake from farmers. Although ISRI has been proactive and successful in seeking out new private company partners like PT GMM, the scale of operations in Madura is small, and in reality the partnership is unlikely to secure the large-scale funding required to continue ISRI's core research into varietal development and good agricultural practices.



Cassava—UNEJ, PT BCM, processing clusters and cooperatives. UNEJ has developed links with MOCAF processor PT BCM over the last ten years, and experimented with different models of partnership involving local cooperatives, chip processing clusters and local investors. While this intervention focused on enhancing on-farm productivity of cassava and improved processing techniques in community-based processing clusters, it was building on an established partnership. The different organisations each play a key role in the supply and processing of cassava, which contributes to ongoing sustainability providing the price for cassava is adequate. PT BCM adapts to fluctuations in cassava and MOCAF prices by reducing or increasing the production and sale of MOCAF. This can be challenging for the processing clusters and farmers who supply PT BCM. As a result, clusters have been encouraged to diversify their business, and there is an opportunity to provide medium-term market information to farmers to help guide crop-planting decisions in line with expected prices.

Beef—UNRAM, PT Dharmaraya Hutama Jaya (PT Dharma), banks, traders, government. The formal partnership with UNRAM and beef company PT Dharma aimed to foster increased incomes for farmers through the development of a niche ‘herbal beef’ market. Although it collapsed after the Indonesian government took steps to cap the price of beef, the project has achieved significant impact regardless. The UNRAM team tried several strategies to engage different private sector partners, and had some success in working with local traders and large farmers. They also facilitated agreements with Bank NTB and Bank BRI to provide low cost loans for start-up capital, and tried to foster an enabling environment through district strategies for the Sumbawa beef intervention. Ultimately, it could be argued that most of the impact came from relatively simple technology supported by farmer training provided by UNRAM field staff.

Maize and pulse strip-intercropping—UNRAM, Syngenta, and Bank NTB. The partnership received a set-back early on, with the sale and subsequent withdrawal of Asia Crop Solutions (ACS), which had committed to providing credit to farmers and purchasing maize from them. UNRAM was able to establish a relationship with Bank NTB to facilitate credit access via subsidised loan programs; UNRAM, Syngenta and Bank NTB partnered to provide technical support, affordable credit and inputs to maize farmers in Lombok. The partnership addressed key constraints in maize production, providing access to formal credit systems to some households for the first time. Innovation in the system has depended on significant efforts in brokering and facilitation by UNRAM, with support from ARISA and SAFIRA, to ensure smooth relationships between farmers, the bank, input suppliers and government.

Dairy—Nestlé, UB. This private sector-led partnership between Nestle and UB aimed to improve the livelihoods of smallholder dairy farming households in East Java through the development of the farming of fodder and its use in dairy. Distinct from other interventions in ARISA where the RIs often provided a strong link to the farming community, Nestlé had a long-standing and direct engagement with the farmers and local dairy co-operatives. These networks enabled the implementation of key on-ground activities within the partnership. This transaction-based partnership was supported by ARISA, who played a brokering role. This model worked effectively in that the research findings have informed Nestlé strategies to support smallholder farmers, and has benefited from Nestlé’s reach, resources, motivation and capacity to foster change within the dairy sector. Further, the partnership has supported a new business model of fodder farmers which has the potential to create a significant value-add to dairy production.

Source: ARISA partnership case studies.

Changing role of the RIs

As part of the expression of interest and partnership agreement processes, potential partners defined standard roles for themselves: researchers would provide technical expertise and training; private sector partners would facilitate market access (to secure inputs, transport and purchase of goods, and/or processing); together the RI and private sector would facilitate training, and dissemination of information. Over time, it became clear that for partnerships to be successful, partners (especially RI partners) needed to take on a range of roles outside their traditional mandate (see also Table 1). For example:

- The RIs facilitated access and legitimacy for the private sector partner at the community level. At times this appeared to be of greater value to the private sector partner than the RI's technical and research expertise. This was seen in all the partnerships except for dairy, where Nestlé has its own long history with dairy cooperatives.
- Lead researchers often acted as champions, facilitators and brokers to support the partnerships to adapt to new circumstances.

These types of roles are not recognised by formal university rewards systems—despite addressing key constraints to research impact. For academics who had already attained professorial status and were unconcerned about promotion, motivation to take on these more complex roles was linked to their personal commitment to improving the livelihoods of poor households.

At the same time, the point system which governs promotion and is based on traditional metrics (such as publication in 'home' disciplines) may constrain less established researchers from taking on this role.⁸

The ARISA team did not originally conceptualise itself as taking a formal part in the partnership, but rather as a catalyst to bring the partners together. This facilitating role has been important in terms of supporting partners through difficult stages of the intervention.

Changes due to ARISA

This section focuses on how the partnerships facilitated by ARISA have impacted on the partners themselves, and briefly considers the extent of impacts to income at the farm level (see Table 1).

⁸ In addition to the eight interventions, ARISA worked closely with the Ministry of Technology and Higher Education to find ways to support and incentivise research institute-private sector partnerships in Indonesia. Significant progress has been made in relation to the development of government regulations on intermediation offices (units set up by universities that provide specialist skills and support to researchers trying to engage with the private sector), and revisions to the regulations determining researcher roles and promotion processes to recognise and encourage researchers who engage with the private sector. Given the complexity of implementing these types of changes, which require agreement across ministries, results will be take several years to be seen.





Partnerships foster new problem framing for RIs

ARISA facilitated many of the researchers to reframe their approach to rural development, from a focus on technical solutions to the broader institutional and systemic conditions which shape if and how farmers are able to take advantage of new technology.

For example, the original framing of the beef intervention had the leucaena-based feeding system at its core, and partners took for granted that the marketing of high quality beef would follow. While the benefits of the technical package were affirmed through changes in farmer practice, the RI team were forced to consider market dynamics more deeply, as well as improving access and fairness for farmers. The original aim within the beef partnership was to shorten the value chain by reducing reliance on (and the number of) traders and intermediaries, who were perceived to be keeping farmer prices low. With PT Dharma unable to compete with the small profit margins of traders, the RI team began to understand the trader role differently, recognising that traders often compete with each other, tolerate low margins, and offer reasonable prices to farmers. Their size and multiple business lines means they are more flexible than larger companies and are able to purchase at the farm gate—a key benefit for farmers who lack resources to transport livestock.

Increased capacity and interest to engage with the private sector

There is strong evidence that the involvement of RIs in ARISA has improved their awareness of the value of partnering with the private sector to improve scale-out and address market constraints. There is also evidence that the support ARISA provided (including partnership reviews and training) enhanced the confidence and skills of RIs to engage with the private sector⁹.

Increased capacity is important, but cannot overcome some of the deeper challenges affecting RI partners. In ARISA's sugar intervention, the partnership has not yet led to any significant investment by the private sector in ISRI's research agenda. State-owned enterprises remain the dominant producers and processors of sugar, and are probably better placed than smaller companies (such as PT GMM) to support ISRI's core research activities. The position of ISRI, given its privatisation in 2010 and consequent lack of funding, is stark compared to the other RIs involved in ARISA, and highlights a role for public investment into core research programs, at least until relationships with private sector organisations can be sufficiently developed to the point where such organisations are comfortable to play a greater funding role.

Household-level impacts

The number of households benefiting from the use of new technology over the life of the project exceeded RI expectations of what was possible, with maize, dairy and beef each contributing to increases in income for over 2,500 households within two to three years (Table 1). It is important to understand that different partnerships have different timeframes for the full benefits and extent of impact to be seen. For example, generally in the sugar and beef sectors there are longer time-lags between change in behaviour and benefits being realised, due to the longer crop and animal growth cycles. The cassava partnership involved shifting farmers from maize (which has a three to four month turnaround) to cassava (eight to nine months), which created a time-lag for farmers in income generation. In the case of ARISA's sugar intervention, which had an ambitious land-use change agenda, longer timeframes are to be expected.

In addition to income increases, important impacts include:

- diversification of cropping to spread climate risk and expand income sources (maize, cassava)
- the enabling of access to credit, including to women farmers, for the first time (maize)
- women's economic empowerment through and employment in cassava processing (cassava) and maize production

9 ARISA training outcomes survey, August 2018.

Table 1: Types of partnership, roles and impact

TYPE OF PARTNERSHIP<?>		PARTNERS/STAKEHOLDERS AND MAIN ROLES	NO. OF HOUSEHOLDS		
			...with access to tech	... using tech	...with in-creased net income
MAIZE	Collaborative	<p>UNRAM: technical support; agri research; facilitation/brokering between partners, and partners and farmers; community engagement.</p> <p>Syngenta: technical support and promotion of practices through learning centre; sale of inputs (especially seed).</p> <p>Bank NTB: KUR loan processing to enable maize input purchases.</p> <p>ARISA: emergency finance to farmers when the original credit provider withdrew from the partnership.</p>	4,640	3,221	2,735
BEEF	NA/informal<?>	<p>UNRAM: tech support; training; facilitation of PS, extension and banks; championing enabling policy environment; community engagement.</p> <p>Large traders: promotion of practices to farmers.</p> <p>Provincial and district government: provision of resources (e.g. weighing scales), development of government policy and strategies to support smallholder beef production.</p> <p>Dinas peternakan: integration and promotion of practices into existing extension programs.</p> <p>Bank BRI and Bank NTB: processing of KUR loans for establishment of animal fattening enterprises.</p> <p>ARISA: support to identify replacement private sector partner after original partner withdrew.</p>	1,316	2,110	2,667<?>
CASSAVA	Collaborative	<p>UNEJ: technical support and training; championing/facilitating community relationships and local investment; provision of enzyme for cassava processing.</p> <p>PT BCM: support for establishment of chip processing clusters, including business plans and materials; purchase of chips.</p> <p>Chip processing cluster: purchase of cassava from farmers for processing into chips.</p> <p>Parent cooperative: investment in clusters; promotion of MOCAF products.</p> <p>Local cooperative: provision of technical advice and inputs to farmers.</p>	1,376	520	489
SUGAR	Consultative	<p>ISRI: technical support; engagement with community, private and government sectors to champion the sugar industry.</p> <p>PTPN X: farmer extension/training, credit to farmers for input purchases, purchase and post-harvest transport of cane, land for demonstration plots.</p> <p>PT GMM: provision of credit to farmers for input purchases, land for demonstration plots, and purchase of harvested cane.</p>	1,534	849	406
DAIRY	Transactional	<p>Nestlé: provision of additional field staff and loans to support fodder supply chain.</p> <p>UNBRAW: field testing of fodder varieties; establishment of nurseries; training; facilitation of fodder supply chain.</p> <p>ARISA: facilitation of partnership; guidance on skills/approaches to improve scope.</p>	4,172	3,513	2,571

Source: ARISA case studies, ARISA Impact Surveys

Lessons, conclusions and implications

There is a set of issues at a scale much higher than the partnerships which strongly influences how they develop – engagement with a broader set of partners can help influence these conditions

With a diverse private sector dominated by micro- and small enterprise, and the strong involvement of government in commodity markets, the Indonesian context creates a particular set of challenges for RI-PS partnerships. To respond to these challenges and support rural innovation requires diverse partnerships, including engagement with government at various levels (district, provincial and central).

Engagement with central government in particular can help to create enabling conditions for RI-PS collaboration generally (for example, through revisions to university incentive frameworks) and more specifically in key commodity areas. Creating enabling institutional environments requires collaborative and transformative partnerships along with long-term commitment, which is difficult to sustain in short-term development projects.

RI-PS partnerships offer greater opportunity for ongoing, large scale impact

The partnerships which ARISA have established have demonstrated the value of RI-PS collaboration in their enabling of a greater scale of impact from research. This was largely due to the motivation of the private sector, and its input of resources to support dissemination, which developed as a result of increased sales.

Diverse partners bring different analyses of problems along with potential solutions, which is invaluable for rural development. For example, researchers can bring a holistic view of farming systems, contextualising technical improvements within the broader system and trade-offs across land use, labour and productivity. As part of the ARISA program, private sector partners challenged the RIs to look beyond technical aspects of the farming system to consider market constraints and the changes needed to enable sustainable change at the household level.

There are tensions between long-term systemic change and rural development outcomes, and a short-term focus on profit

Alongside the many successes of the partnerships that ARISA facilitated, the alignment of differing goals and interests (such as commercial profit, benefit to households, and research) has been a process of learning and adjustment.

The success and ongoing sustainability of these partnerships is vulnerable to market changes. In some cases (for example, the development of niche markets in the beef sector, the shift of land use in Madura in the sugar sector), this requires a private sector partner willing to bear short- and medium-term losses in order to foster longer-term systemic change. The tension between the focus of private sector partners on short-term profits, and that of ARISA's RI partners on the long-term process of agricultural change and rural development, was ongoing for many of the partnerships. This was exacerbated by the broader AIP-Rural program focus on adoption and impact numbers, which highlight short-term change but that are not necessarily good indicators of the long-term systemic change required in order for any benefits resulting from the partnerships to be sustainable.

There is no one model of partnership, and partnerships must be flexible in order to adapt in response to challenges

For a market systems development project to be successful, finding the 'right' partner is essential and often challenging. A definition of the private sector needs to be inclusive of the diverse range of actors in Indonesia—including smallholder farming households, local traders, and micro- and state-owned enterprises, through to the large multi-nationals. Government actors also have a fundamental role to play, in providing 'permission' but also in facilitating a longer-term shift in government services towards sustainable (that is, non-welfare) approaches to service delivery.

The configuration, goals and modes of operation across the partnerships in ARISA have been diverse, and matched to the problems and partners involved. Despite (or perhaps because of) these individual approaches, most partnerships were able to deliver significant impacts on the ground.

Within partnerships, external dynamics and the multiple agendas of partners require an adaptive approach as

circumstances change. As part of ARISA, the withdrawal of ACS (from the maize intervention) or PT Dharma (from the beef intervention) could have meant the collapse of the intervention and cessation of activities. However, the development of new relationships with additional (informal) partners proved a successful response, with RI team members playing key roles as champions, brokers and facilitators.

ARISA's initial framing within the AIP-Rural program and alignment with the M4P approach downplayed engagement with government. However, in the Indonesian context, government remains an important actor especially at the district level, and new partners have often included government actors.

M4P programs may benefit from taking a more diverse approach to identifying partners and building partnerships, to create a more effective and sustainable portfolio.

A significant amount of capacity building is required to support RI-PS partnerships

Assumptions made by ARISA at the start of the project about the capacity of RIs and the private sector to productively engage in partnerships for innovation need to be revisited.

ARISA focused on improving the capacity of RIs to partner with the private sector. Its formal capacity building program fostered improved understanding, skills and confidence to engage with the private sector, and this was complemented by 'informal' support to partners in moments of uncertainty (including support for identification of new partners (beef), facilitating a better understanding of RI vs. private sector needs (dairy), and in maize, backstopping lost private sector financial support). This informal support has also proved significant in enabling partnerships to overcome challenges.

Future efforts may also benefit from giving equal attention to how to enable the micro- and small enterprise sector to take advantage of these types of opportunities.

A competitive expression of interest process is one mechanism to encourage innovation, but multiple mechanisms are needed

ARISA initially experimented with a competitive expression of interest process which predominately attracted researcher-led proposals; it then expanded this to include brokered partnerships which were also effective (for example, the dairy intervention).

As part of future efforts to catalyse RI-PS partnerships, a more effective approach may be to build RI 'readiness' to partner with the private sector before implementation of the partnerships, including building skills in understanding private sector needs, and identification of suitable partners. Although such an approach is unlikely to have prevented all of challenges that the partnerships faced, it at least would have meant RIs were better placed to identify and broker alternative solutions. The experience highlights the value of support mechanisms which help RIs in the development, design, identification and brokering of relationships with private sector partners as part of capacity building. This role is currently weak in the Indonesian innovation system, but could be played by university-based intermediation offices.

There is also a role for innovation support mechanisms, such as intermediation units within universities or collaboration platforms spanning commodities (such as ecotourism) to identify and facilitate solutions through partnership approaches.

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