TIRTA Tertiary Irrigation Technical Assistance



KEMENTERIAN PEKERJAAN UMUM DAN PERUMAHAN RAKYAT





Progress Report and Implementation Plan

Tertiary Irrigation Technical Assistance

July 2017

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List of Abbreviations

AIP-Rural	Australia-Indonesia Partnership for Rural Economic Development
ARISA	Applied Research and Innovation Systems in Agriculture
AUD	Australian Dollar
BAPPENAS	Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)
BUMDes	Badan Usaha Milik Desa (Village Owned Company)
DCED	Donor Committee for Enterprise Development
DFAT	Australian Government's Department of Foreign Affairs
DINAS	Dinas Pertanian dan Peternakan = Agricultural and Livestock Service Office
EJ	East Java
Gol	Government of Indonesia
HIPPA	Himpunan Petani Pemakai Air (Farmers' group on Irrigated land)
IP	Intervention Plan
ISD	Intervention steering document
ISF	Irrigation service fee
KPI	Key Performance Indicator
M4P	Making markets work for the poor
MIS	Management information system
MoU	Memorandum of Understanding
MRM	Monitoring and Result Measurement
MTR	Midterm review
O&M	Operation and maintenance
PMC	Portfolio Management Cycle
PRIP	Progress Report and Implementation Plan
PRISMA	Promoting Rural Income through Support for Markets in Agriculture
S(BC)	(Senior) Business Consultant
SAFIRA	Strengthening Agricultural Finance in Rural Areas
SMEs	Small and Medium Enterprises
TIRTA	Tertiary Irrigation Technical Assistance
TL	Team Leader
WEE	Women's Economic Empowerment

Executive summary

The objective of Tertiary Irrigation Technical Assistance (TIRTA) is to increase the income of 10,000 poor female and male farmers in East Java by 60% through stimulating access to tertiary irrigation. TIRTA is the second largest program under the Australia-Indonesia Partnership for Rural Economic Development (AIP-Rural), a partnership between the Governments of Australia and Indonesia to address the most significant constraints to rural income growth and boost farmer incomes in five provinces in Eastern Indonesia

PROGRESS

 TIRTA's existing portfolio comprises three thematic intervention areas implemented across seven irrigation schemes. The three intervention areas are: irrigation technical assistance, irrigation management capacity improvement and integrated productivity enhancement. The three thematic interventions are being implemented in different combinations to establish, expand or improve irrigation schemes. TIRTA's portfolio is currently comprised of seven live irrigation schemes, and ten pipeline schemes.



FIGURE 1 TIRTA INTERVENTION DEVELOPMENT

2. Major progress was achieved in the development and promotion of <u>irrigation technical assistance</u> through the establishment of irrigation consulting. A new partnership with Mesindo, a pump supplier, already shows the high potential of such a service in stimulating investments in tertiary irrigation and ensure higher and more stable returns, thanks to improved irrigation system design and equipment/infrastructure. The next semester will focus on improving Mesindo technical and business capacity while promoting their offer among TIRTA's partners and beyond. Larger irrigation input suppliers and retailers will be approached to encourage crowding-in.

The promotion of <u>integrated productivity enhancement</u> remains strategic to increase the sustainability of irrigation businesses and ultimately encourage further investments. TIRTA renewed its partnership with Syngenta to promote crop protection, and brokered a new partnership with Hextar to facilitate the adoption of non-subsidised fertiliser.

The <u>irrigation management capacity</u> component targeted at HIPPAs is still in the early stages of development. Although there is not yet sufficient evidence to prove the model, the training stimulated awareness regarding the importance of improved organisational and financial management. The results from the first operation season will reveal to what extent and at what speed the G-HIPPAs can improve their performance.

3. TIRTA facilitated the establishment/expansion of seven additional irrigation schemes, which capacity cover 813 Ha or 2165 HHs, of which 29% has been used for the current dry season, 25% will be used in the second semester of 2017 and 46% during dry season one and

two of 2018. 135 additional HHs accessed productivity enhancement trainings and improved inputs from Syngenta and Hextar.

660 additional HHs used irrigation in the current semester and 94 additional HHs used Syngenta's crop protection package. Part of the additional use of irrigation generated this semester is achieved through additional independent investment by early partners that continued to expand their irrigation businesses – an early sign that the TIRTA concept is sound and has the potential to catalyse systemic change.

This semester's outreach stems from the additional uptake of Syngenta's crop protection (72 HHs). Harvest from the first (delayed) dry season is expected between October/December.

4. TIRTA revised the projections of the existing portfolio to programme end, and kick-started a diversified approach to pipeline development to ensure programme targets are reached. Factors considered in the projections review include the average intervention turnaround time, the time lag between the completion of the irrigation infrastructure and the system operating at full-capacity and the aftermath of La Nina. The total outreach projected outreach from the current portfolio, including the pipeline is 73% of the overall targets. Although behind with beneficiary targets the concept is already showing strong signs of buy-in; TIRTA is confident that its robust strategy and the four additional staff will quickly generate additional pipelines and achieve the 10,000 HHs target.



FIGURE 2 ACTUALS AND OUTREACH PROJECTIONS

- 5. The cumulative weighted average for Net Attributable Income Change is IDR 3,078,973,649 (~85%), considerably higher than the 60% target set for the programme. The additional NAIC this semester is IDR 270,501,126 (41%), generated through productivity enhancement.
- 6. The other key performance indicators reflect the sustainability and validity of TIRTA's approach. Partners' turnover increased by 46% from S2 2016 to S1 2017 at IDR 308,248,050 (AUD 30,824.81) and total private sector commitment to invest is at IDR 6,940,862,500, 51% of which (IDR 3,558,224,000) was spent before the end of the current semester.

TABLE 1 TIRTA KEY PERFORMANCE INDICATORS

KPI	Description	Actual cumulative Y17S1	Actual Y17S1
KPI1	# Outreach (all farm HHs)	426	72
KPI1a	# Outreach (<\$2.5 PPP)	315	58
KPI2	Net Income Impact in IDR (all farm HHs)	3,078,973,649	270,501,126
KPI2a	Net Income Impact in IDR (<\$2.5 PPP)	2,257,116,016	216,175,341
KPI3	Number of ISPs with increased turnover	6	4
KPI4	Additional increased turnover of ISPs in IDR	978,248,050	308,248,050
KPI5	# Number of Interventions	8	2
KPI6	Initiatives by Government to improve BEE	0	0
KPI7	# Intervention Partners (public & private sectors)	12	4
KPI8	Private Sector Partners co-investment in IDR	3,558,224,000	1,182,369,750

7. The VfM indicators further corroborates the strength of TIRTA's strategy. Ex-post investment leverage as per direct intervention costs is 2.58 while the ex-ante investment leverage is 2.75; Ex-post social return on investment is AUD 8.32 and; Ex-ante Investment per HH is AUD 87 whereas the ex-post value is 4,670,741 IDR/HH or 467.07 AUD/HH. -

8. -

MANAGEMENT RESPONSE

- 9. The next semester will focus on nurturing the pipeline, while ensuring timely implementation of the existing portfolio. This will be achieved through desk-based mapping using satellite imageries, the promotion of irrigation consulting, an irrigation fair and increased interaction with the Ministry of Public Works and Agriculture.
- 10. **TIRTA will investigate alternative irrigation management models;** beyond advocating for more management support by government bodies in charge of promoting HIPPAs, TIRTA will research the potential of a 'Build-Operate-Transfer' type of irrigation operation, and/or the promotion of external private 'management irrigation operators' to run irrigation schemes on behalf of farmers' groups against a fixed fee.
- 11. **Streamline construction procurement** through Partnership Agreement (PA) as opposed to MoU, which will streamline the procurement and construction process, relieve TIRTA of the time-consuming subcontracting, and also reinforces the legitimacy of the partner as an irrigation provider.

1 Broader policy, institutional and environmental context

There have been no new policies since the annulment of UU No. 7/2004. Any policy related to water and irrigation still refers to UU No. 11/1974. There are different lead government agencies on tertiary irrigation and there is a need of better inter-agency collaboration. In Bojonegoro the Dinas of Agriculture acknowledged that although they have provided irrigation equipment to establish new schemes in the last few years, the capacity building of HIPPAs and technical trainings have been confined to a regular programme to train Government Extension Services. The Dinas of Public Works, responsible for irrigation infrastructure, has delivered some management training to G-HIPPAs but their main focus was on G-HIPPAs located close to the Bengawan Solo.

The Asia Development Bank (ADB) has reached an agreement on US\$ 600 million (Rp 8 trillion) loan for Indonesia to improve its irrigation system to support the implementation of Indonesia Irrigation Improvement Programme (IIP). IPP to (i) rehabilitate, upgrade, and modernize irrigation schemes that serve 3.2 million hectares (ha); (ii) promote participatory irrigation management; (iii) strengthen water users' association (WUA) participation; (iv) improve the service delivery of river basin organizations and water resources agencies; and (v) improve operation and maintenance (O&M) through asset management and needs-based budgeting. Although this is not expected to markedly affect TIRTA's implementation, the size of the investment and the strong emphasis on Water Users Associations (HIPPAs) may discourage private sector investments and participation in tertiary irrigation further. TIRTA met with ADB and IFAD at the beginning of the semester and ADB recognised the value of and need for insights from programmes like TIRTA to learn about alternative solutions on how to establish and manage irrigation services at the tertiary level in an efficient manner.

The prolonged and heavy rainy season caused by La Niña delayed the demand for irrigation during the first semester 2017, meaning that there might be only one dry season harvest this year, and caused significant losses due to low productivity and crop failure. The programme will continue to monitor, assess and manage such risks, which could affect crop planting and harvest cycle, and yields.

The seasonal outlook for eastern Indonesia in the coming months is for a reasonably high probability of below average rainfall, particularly for the period August to November, due to a positive Indian Ocean Dipole event to develop in the second half of 2017. Although there is no indication of an extended drought into the rainy season, the initial part of the rainy season crop cycle might require additional water should the rain not be sufficient. Yet, this is expected to have minimal impact across TIRTA's supported irrigation schemes as the delayed planting in the dry season implies farmers will harvest in early December and start the rainy season planting in January – when the rainfall is forecasted to be normal. Nevertheless, should December and January be dryer than normal, the demand for irrigation would likely increase.

2 Portfolio management

2.1 Portfolio development progress

TIRTA profiled 25 additional sites and 27 potential partners, attracted 8 applications through a stakeholder event in Tuban, developed 2 additional Intervention Plans and signed 3 MoUs/PAs. Although the length of the intervention development process significantly varies contingent to the technical complexity and partner profile (entrepreneurs vs HIPPAs), TIRTA managed to overall increase efficiency through improved staff capacity and processes.

Out of the new leads, seven which are expected to have a quick-turnaround have been included in the pipeline, in addition to four previously identified interventions which targets and vision have been refined. Projections estimate an additional outreach from the total pipeline of 3,983 HH.

TIRTA did not achieve all its intervention development targets. Yet, while most of this semester focus was on accelerating implementation to build evidence for the Proof of Concept, during the last weeks the team intensified intervention development activities, with seven IPs planned to be assessed by the CMT panel between July and August.





The end of the current semester also kick-started a diversified and improved approach to the identification of new leads and pipeline development. This has a number of strands: consulting with the Dinas Pertanian and Public Works to build a database of HIPPAs which also classifies HIPPAs whose irrigation schemes require rehabilitation and active HIPPAs with potential and capacity for expansion; partnering with Multi Mesindo Jaya (MMJ), a pump and spare parts retailing business that has been also a supplier of irrigation equipment to the Dinas Pertanian and thus can capitalise on their immediate knowledge of the local market to identify new potential schemes; holding one irrigation fair to step up the momentum and attract a new generation of service providers, where TIRTA's partners will showcase the irrigation business models implemented and convey their replicability to other market players; and finally promoting irrigation as a vertically integrated model through the regional and national rice millers associations.

2.2 Portfolio analysis

TIRTA's strategy to catalyse private sector investments in tertiary irrigation and facilitate improvements to the efficiency, technical and economic viability and scale of irrigation schemes is achieved by addressing key systemic constraints to irrigation provision through three intervention areas – see TIRTA's strategic Result Chain in Annex

- i) Irrigation technical assistance, as poor irrigation system design, operation and maintenance (O&M) remain the main factors leading to the sub-optimal performance and gaps in operations of tertiary irrigation;
- ii) Productivity enhancement i.e. the integration of improved agricultural inputs and GAP promotion in the irrigation business model, as the profit and long-term sustainability of irrigation businesses is strictly dependent on yields, being irrigation paid for in-kind and as a share of the harvest, and;
- iii) **Irrigation management capacity improvement**, since many HIPPAs are not very functional and often fail to provide best quality irrigation to farmers and/or serve only a limited number of farmers, significantly below what the full irrigation system capacity would allow.

The three thematic interventions are being implemented in different combinations to establish, expand or improve irrigation schemes. TIRTA's portfolio currently comprises seven live irrigation schemes, and ten pipeline schemes as summarised in Table 2. Details, progress and plans for each intervention area are provided in the sub-sections below, and TIRTA's implementation plan is included in Annex 6.

TABLE 2 TIRTA PORFOLIO SUMMARY

	TIRTA Portfolio Summary																	
No.	No. Intervention Partne			Intervention Areas		Cumulative S2Y16	e Additional Actuals S1Y17		Additional Projected S2Y17		jected	Additional Projected S1Y18		ojected	Additional Projected S2Y18		ojected	
			Irrigation TA	Productivity Enhancement	Irrigation Management	Impact	Access	Use	Impact	Access	Use	Impact	Access	Use	Impact	Access	Use	Impact
					Exis	ting Interve	entions											
1	Pilanggede	Haji Achsin	х	х		304	151	151				151						
	(Kedungbondo)-Adapt	Haji Achsin					248	248				248						
2	Leran 2	Kusnadi	х	х		50	105	32	14			10						
3	Malo	GHIPPA	х	х	х		368	198	58			126		229				229
4	Piyak	GHIPPA			х		522	125				125		397				397
5	Kemiri	Haji Arifin	х	х			571			50	416	21		136	385	286		136
					TOT	Existing Inter	ventions	5	1	1	1	1	1	1				1
	ACCESS - USE - IMPA	CT (Existing)				354	1965	754	72	50	415	681		761	385	285		761
	IMPACT CUMU	LATIVE				354	<u> </u>	426			1107			1492			2253	
	1				New interven	tions - Cons	tructio	n Start	ed	-	-		1		r	1		1
6	Leran 3	Pawitnar	Х	Х			335			240	196			124	165		148	233
7	Besah	Ronny	Х	Х						700	630				630			
					TOT Existi	ng and New I	Interven	tions	1				1			1		
	ACCESS - USE - IMP	ACI (New)				254	335	400		940	826			124	795		148	233
		xisting and New)				Dinalina		426			1107			228/			3281	
40	Divok	CHIDDA	1	~	~	Pipeillie			1	[[[1			260	242	242
4d	Piyak	Haji Achsin	v	X	X					110				127		500	342	542 427
0		Haji Arifin	×	^						750				713				713
10	Kanten	Svamsul Hadi	x							750			300	285				285
11	Sambiroto	НІРРА	x										450	428				428
12	Pucang Arum	НІРРА	x										210	200				200
13	Kedungroio	HIPPA	x							300	285				285			200
14	Cangkring	Haii Jinawan	x							450	428				428			
15	Tejo	BUMDES Teio	x	x						270	257		150	60	257		15	10
16	Gayam	Hana	х	x						300	-			285	-		-	285
17	Kedungbondo	Haji Achsin	х	x		İ				343	325				325			
					TOT Existing, N	lew and Pipe	line Inte	rventio	ns						·			
	ACCESS - USE - IMPA	CT (Pipeline)								2861	1294		1110	2397	1294	360	357	2689
MP/	ACT CUMULATIVE (Existin	ng, New and Pipeline	2			354		426			1107			3581			7264	

TIRTA conducted a portfolio review, assisted by the QMT process, which confirmed TIRTA's efforts to push for replications with existing partners who showed capable and committed, while focusing on irrigation technical assistance. This is expected to build a critical mass of irrigation providers with improved capacity and links to critical supporting functions, which will foster the expansion of private sector-led irrigation provision. Additional recommendations included: exploring the potential of facilitating a buyback guarantee agreement between the irrigation service providers and the farmers to maximise profits; identify and assess synergies with PRISMA's agriculture inputs partners to work with TIRTA; and explore how TIRTA could add value to the government subsidy programmes covering irrigation. Finally, Kedungprimpen intervention was dropped due to the partner's limited commitment and the lack of transparency related to the availability of funds for the irrigation expansion and its operation.

TIRTA also recognised the need to revise the existing portfolio projections to programme end.

The factors considered in the revisions included the average intervention turnaround time, the time lag between the completion of the irrigation infrastructure and the schemes operating at full-capacity, the

challenges and successes of the past year and the aftermath of La Nina. The existing portfolio, including the pipeline, is projected to reach 72% of the overall target.

Although behind with beneficiary targets the concept is already showing strong signs of working; TIRTA is confident that its robust strategy and the four additional staff will quickly generate additional pipelines and achieve the 10,000 HH target. As preparatory activities covering the existing pipeline are already underway, during the second semester 2017 most staff capacity will be allocated to the identification of new interventions and scoping new districts as informed by the rice GSD, starting from Ngawi, Madiun and Banyuwangi.

IRRIGATION TECHNICAL ASSISTANCE

Major progress was achieved in the development and promotion of Irrigation Technical Assistance and the establishment of irrigation consulting through a new partnership with Mesindo, a Surabaya based pump retailer. Similarly to other bigger players that TIRTA targeted and engaged with in the previous semester, Mesindo's core business serve a very broad spectrum of sectors yet irrigation remains peripheral. This is mainly driven by the scepticism over the irrigation market potential, due to both the uncertain trend of government subsidies and a strong belief that irrigation consulting is not attractive to most irrigation providers. Nevertheless, Mesindo's relatively small size and related dynamism allowed them to be more responsive to TIRTA's preposition. The design of the intervention was adjusted to implement a more gradual strategy aimed at proving the commercial case for investing in irrigation consulting, while simultaneously stimulating the demand for such service within existing partners and beyond.

Mesindo used the SOPs and templates developed in the previous semester and conducted 6 additional irrigation systems evaluations and improvement plans. The technical recommendations have been followed by all TIRTA's partners. One partner hired Mesindo to develop a full irrigation system design, and bought three new pumps from Mesindo. Furthermore, partners who accessed the service and potential partners TIRTA introduced to Mesindo's offer said to be willing to pay for such service in the future. The positive reaction of the irrigation service providers shows early signs of systemic change (respond, and expand) and confirms the high potential of and commercial case for irrigation consulting in facilitating investments in tertiary irrigation and ensuring technical standards that maximise profits.

The partnership with Mesindo will follow with the roll-out of a Certified Irrigation System Analysts training. In order to stimulate the business opportunity and to underpin the sustainability of a fee for service private sector support model to the irrigation sector, their technical capacity requires improvement. PTCHA¹ will develop and deliver the Certified Irrigation System Analysts training which aims at building a set of practical skills, ranging from irrigation pumping system evaluation and crop water use requirements, to perform and convey relevant analysis on how to improve the productivity from irrigation system (reduce costs & increase crop yields). It includes class-room based learning and practical experience across 3 irrigation system audits/evaluation. Mesindo already invested in monitoring equipment and hired three additional staff on retainer (pipe specialist and electrical engineer and a field inspector) who will participate in the training. -

Meanwhile TIRTA will continue to facilitate the promotion of Mesindo and support them with the business development and marketing of the Irrigation Consulting service. While thirteen additional audits are already planned for next semester, TIRTA expects more as a result of the visibility of Mesindo on the ground and specific marketing of the service. Mesindo's product/service must be honed and tailored to different irrigation provider segments and propensity to see value in paying for irrigation system audits/evaluation. While performing audits in the next semesters, TIRTA will support Mesindo in developing and implementing their marketing strategy, and use an irrigation fair to promote their offer across existing and potential partners. Mesindo also decided to establish an office in

¹ PTCHA is an Indonesian (Denpasar) based Consultancy Company with a variety of expertise and experience in irrigation design and engineering. PTCHA has previously conducted irrigation schemes assessments for TIRTA.

Bonjonegoro to better serve the market in Bojonenegoro and Tuban and ease the identification of business opportunities.

Mesindo's case as an irrigation Business Development Service (BDS) will be used to stimulate crowding-in. Its success rate will be defined by the type and quality of services that find an appeal in the market. For the TIRTA programme to be successful the BDS service has to be used as one of the many leverages to further expand in East Java and East Indonesia. As TIRTA shows the interest of consulting services by the irrigation providers through Mesindo, it is expected that larger players (Grundfos, Torishima, Ebera) will also see the opportunity and stimulate their agents to play similar roles. The larger players could even take up this role themselves to increase their sales in new geographic areas. At the same time TIRTA is actively looking for other dynamic businesses similar to Mesindo.

A visit to Torishima in Jakarta was also instrumental in stimulating dialogue and creating awareness among existing partners and representatives from the Dinas around the benefits from improved irrigation system design and equipment. The irrigation providers showed interest in using Torishima pumps in view of their quality; although they all expressed their concerns over the comparatively high price, one of them later purchased three new Torishima pumps. The Dinas Pertanian Bojonegoro is interested in having their consultants trained by Torishima staff to ensure the irrigation system designs of the schemes they support are adequate.

PRODUCTIVITY ENHANCEMENT

The promotion of improved inputs and good agricultural practices remains strategic to increase the sustainability of irrigation businesses and ultimately encourage further investments. As long as irrigation is paid for in-kind as a share of the harvest, the incentives are high for irrigation providers to integrate the provision and promotion of better inputs and GAPs in their businesses. The commercial case is even stronger when irrigation providers are also rice millers, as the vertical integration allows them to generate higher returns from both businesses. On the other hand, irrigation providers represent a key market segment that could be targeted by input suppliers, in view of the nature and size of their relationships with farmers. Yet, these business models are still untapped.

After the positive results of the first generation of demo-plots and trainings to promote improved crop protection with Syngenta, TIRTA renewed the partnership and strengthened the intervention strategy to better target irrigation providers. Besides the standard Gromore trainings targeted at farmers (6 additional locations) and one Expo, Syngenta will deliver the same training to irrigation providers' staff to further assist farmers in using Syngenta's product, which is expected to increase the adoption rate and ultimately profits. Haji Achsin has confirmed his commitment to boost the adoption of Syngenta's crop protection package through in-kind credit and adapted the distribution method from using a third party to his own employees. The reduced costs from using an integrated distribution allow him to charge the farmers a lower price, thus increasing the demand for in-kind credit. Haji Arifin, exposed to the success in Pilanggede, showed more interest in the business model and awaits the results from the trainings and Expo to assess the option of providing in-kind credit in the next season.

A new partnership with Hextar facilitated their market penetration in Bojonegoro in order to promote fertiliser -. Whereas this semester was focussed on testing the technology and familiarise the brand through 21 demoplots and two trainings, the next semester will increase access to the improved inputs and related GAP and scale-up their marketing through an expo. As Hextar has no distribution channels in Bojonegoro the irrigation provider in Leran 3 brokered the link between Hextar and two local ag retailers (one man and one woman) who will be selling Hextar's fertilisers under a flexible payment schedule contingent on sales results. The agricultural input retailers also participated in the trainings and promoted the adoption of Hextar's fertilisers.

IRRIGATION MANAGEMENT

TIRTA selected the Insitut Pertanian Bogor (IPB) to develop a training curriculum aimed at improving HIPPAs management capacity. The training covers HIPPA's institutional development, irrigation infrastructure, water distribution and operation and maintenance, water use management, and financial management. The training includes class-room based learning, one exposure visit to a successful HIPPA and five coaching sessions during the first season and beyond if necessary.

IPB has completed the pilot training and exposure visit with G-HIPPA Malo and G-HIPPA Piyak and will continue the coaching through the next semester. Participation to the sessions was positive, with 12 G-HIPPA Pyiak's members and 6 people from government extension service of Kanor sub-district, and 17 people from G-HIPPA Malo's members and 13 from village administration staff and government extension staff, whereas 9 members of both G-HIPPA participated in the exposure visit to HIPPA Subur Makmur in Klotok, the second best HIPPA at national level.

The trainings and exposure visit were successful in raising awareness regarding the importance of improved organisational and financial management. Yet, they were not sufficient to upgrade the capacity of either HIPPAs and to make substantial changes to their operations. Hence, the tailored coaching should be key to improve their performance during this season. G-HIPPA Pyiak is facing additional challenges as the demand for irrigation for the dry season is still unclear due to a maize seeds - programme from the Dinas Pertanian.

Comparatively the HIPPA irrigation management capacity component of TIRTA's portfolio is moving slower than expected. With limited traction to establish combined business models with HIPPAs and irrigation providers, -, the feasibility of a private sector led irrigation management consulting service/capacity building is still unclear. Nevertheless, the intervention is still very much in the action and the unfolding of the activities in the second semester will allow the assessment of the intervention results and may also unveil some untapped opportunities. Meanwhile, TIRTA is exploring a number of variations to the original vision for the intervention, and continues to interact with the government bodies who establish HIPPAs.

2.3 Key performance indicators and projections

OUTREACH, USE AND ACCESS

Irrigation systems have been developed in 7 sites, which capacity covers 813 Ha or 2165 additional HHs. 29% of the additional access has been used in the current dry season, 25% will be used in the second semester of 2017 and 46% during dry season one and two of 2018. This progressive adoption, as opposed to the immediate conversion from access to use, is due to a common sequential expansion trend, whereby the newly established irrigation systems are not operated at full capacity from the first season, but rather progressively across a two to three season interval.

135 additional HHs accessed productivity enhancement trainings and improved inputs from Syngenta and Hextar. Productivity enhancement activities were also postponed due to the delayed planting, yet demoplots locations have already been identified and trainings planned to start in August, and expect to reach 540 HHs.

Although La Nina prolonged the rainy season and delayed the demand for irrigation, 660 additional HHs started using the newly established irrigation services across five locations in the current semester, almost double than that of last semester. Part of this result (39%) was achieved through independent investments in additional irrigation expansion by TIRTA's partner, indicating early sign of systemic change. Furthermore, 94 HHs additional HHs used Syngenta's crop protection package, also double than last semester.

The additional outreach for the current semester is 72 HHs (58 HHs < \$2.5 PPP) generated through the additional uptake of Syngenta's crop protection. As TIRTA generates most of its impact in the dry seasons and harvest from irrigated land in the rainy season suffered severe pest outbreaks which caused crop failure, no impact from irrigation can be presented this semester. Yet, the significant access and use generated this semester is evidence to the major progress the programme has achieved in the past year. Furthermore, TIRTA's high conversion ratios suggest that almost 100% of this semester access will translate into outreach.

The projected outreach from existing and new interventions is 3,280 HHs by the end of 2018, and 3,985 HHs from the pipeline. The total projected outreach from the existing portfolio is 7,261 HHs by the end of 2018.

+ 2300 ACCESSED IRRIGATION AND/OR IMPROVED INPUTS AND GAPS

+ 754 HH USED IRRIGATION AND/OR IMPROVED INPUTS AND GAPS

+ 72 hh benefitted FROM IMPROVED INPUTS AND GAPS

FIGURE 4 ACTUALS AND OUTREACH PROJECTIONS



INCOME

The cumulative weighted average for Net Attributable Income Change is IDR 3,078,973,649 (~85%), considerably higher than the 60% target set for the programme. The additional NAIC this semester is IDR 270,501,126 (41%), generated through productivity enhancement. This is considerably lower than the NAIC increase generated through irrigation alone last semester (128%), which is in line with the projections and corroborates the potential of irrigation in increasing poor smallholders' incomes.

OTHER KPIS

Partners' turnover increased by 46% from S2 2016 to S1 2017 at IDR 308,248,050 (AUD 30,824.81). While the turnover from irrigation was lower than forecasted due the crop failure in Kedungbondo, the returns for the agricultural input retailers in Pilanggede and Malo are very positive thanks to a 67% average increase in sales of Syngenta products promoted during the trainings and demos in the two locations.

TIRTA so far stimulated private sector commitment to invest IDR 6,940,862,500, 51% of which or IDR 3,558,224,000 was spent before the end of the current semester. Two partners have independently invested additional IDR 293,985,000 to further expand their irrigation businesses. This shows the evident partners' commitment and backs the case that TIRTA's concept is sound.

VALUE FOR MONEY INDICATORS

Ex-post investment leverage as per total intervention costs is 2.58 while the ex-ante investment leverage is 2.75. The range of actual values to date (0.82 Min - 5.79 Max) is indicative that TIRTA is facilitating tailored and responsive partnerships that respond to the needs, risks and capacity of the partners, rather than offering a standardised package.

Ex-ante Investment per HH is AUD 87 whereas the ex-post value is 4,670,741 IDR/HH or 467.07 AUD/HH; yet the latter could only be calculated across the partial outreach achieved from three interventions. As the available evidence from the past semester suggests that the conversion ratio from use to benefit is likely to be 100%, TIRTA can confidently expect a small variance.

Ex-post social return of investment from three interventions is AUD 8.32, which corroborates the strength of TIRTA's approach and the high impact of irrigation on farmers' incomes.

All Value for Money (VfM) indicators are calculated using direct interventions costs; TIRTA is on track to present VfM using total programme costs next semester, when the cumulative outreach measured will allow for a more accurate point of reference.

TABLE 3 PROGRAMME LEVEL KPIS

KPI	Description	Actual cumulative Y17S1	Actual Y17S1
KPI1	# Outreach (all farm HHs)	426	72
KPI1a	# Outreach (<\$2.5 PPP)	315	58
KPI2	Net Income Impact in IDR (all farm HHs)	3,078,973,649	270,501,126
KPI2a	Net Income Impact in IDR (<\$2.5 PPP)	2,257,116,016	216,175,341
KPI3	Number of ISPs with increased turnover	6	4
KPI4	Additional increased turnover of ISPs in IDR	978,248,050	308,248,050
KPI5	# Number of Interventions	8	2
KPI6	Initiatives by Government to improve BEE	0	0
KPI7	# Intervention Partners (public & private sectors)	12	4
KPI8	Private Sector Partners co-investment in IDR	3,558,224,000	1,182,369,750

2.4 Challenges and lessons learned

Interactions with key stakeholders across the three districts and additional sites profiling conducted by the team and Mesindo suggest that unirrigated sites for pump-lift irrigation, across the three target districts, are less numerous than indicated in the design and subsequent analysis and stakeholder engagement. Consultations with the district administrations, existing irrigation providers and the Rice Miller's Association confirmed that whereas in Tuban and Lamongan irrigation already covers an 8/9 km stretch from the river also due to the flatter terrain, in Bojonegoro the topography becomes complex after 2 to 3 km due to elevation. As assessed during the design, the financial, technical and organisational viability of schemes located further than the 1-2 km stretch are reduced, which poses limitations to TIRTA's ability to generate its full outreach targets with its current focus on the three districts. This risk ultimately calls for an adapted strategy.

The pool of potential ISP partners appears limited. Existing irrigation service providers are comparatively small, over 40 years old and self-taught entrepreneurs. Although they are the best placed actors, in view of their experience, contacts and contextual knowledge, they tend to have limited appetite to expand. This is related to the high costs of establishing relationships with new village which are required to set up the irrigation business and avoid the risks of hostile takeovers. They also need to build a sufficient level of trust with the farmers to limit the risk from providing irrigation against a deferred, yield dependent, in-kind payment. At the same time, there are no large experienced irrigation value chains, as they do not see the commercial benefits from establishing or supporting irrigation services. Indeed, although the government repeatedly expressed its policy of withdrawing from tertiary irrigation, the private sector has not seen this as a signal to penetrate the market. -

The HIPPA model supported and encouraged by the public sector poses severe challenges. Studies and analysis this semester confirmed that HIPPAs have institutional shortcomings that are difficult to upgrade. The HIPPAs are by nature dependent on public subsidies and behave accordingly. They expect government budgets to cover for (starting and failing) infrastructure and running costs; as is partially the case in Malo and Piyak. They tend to prioritise their self-interest as farmers which has a disrupting effect on irrigation efficiency and ultimately neglects progressive expansion. Even when links are facilitated between the parties, and PS irrigation providers are keen to take over, rehabilitate the system and manage the service, some HIPPAs tend to demand unfeasible fees which would annihilate profits for the irrigation service provider and thus discourage investments. The bottle-neck seems to lie with the misconception that private sector irrigation does not benefit farmers because of the relatively higher irrigation service fee charged by the private sector. Nevertheless, both live interventions from last semester suggest that newly established and improved private sector irrigation services can attract the demand for irrigation from neighbouring locations. This was the case in Kedunbondo where farmers offered Achsin to serve the area after multiple seasons of poor irrigation provision by another irrigation provider whose irrigation set up resulted in reduced coverage and raised costs, ultimately leading to his bankruptcy. Similarly in Leran 2, groundwater irrigation farmers requested to access irrigation from the recently expanded service. Although it is premature to forecast the same trend and magnitude across the whole portfolio, there are early signs this dynamic will appear in other locations, and that the initial investment triggered by TIRTA and the strengthened capacity of a group of irrigation providers could indeed have the potential to scale-up.

Irrigation expansion often requires the construction of infrastructure which causes a natural time lag of an estimated 3 months from contract to finalised construction, varying contingent on the complexity of the scheme. This is especially true when TIRTA co-invests. The lack of internal technical engineering knowledge further delayed the implementation of some schemes. The hiring of senior business consultants with a background in engineering and the new -governance structure seem have sped up and improved TIRTA's processes and performance.

2.5 Management response

The lower projected outreach from the current portfolio and pipeline, and constraints outlined above point to the need to revise the strategy. The following options will be pursued, and are enabled with TIRTA's expanded complement of staff coming on board early next semester.

Reanalyse the current three districts and other in EJ, engaging local stakeholders. The analysis will be performed through a geoportal² for satellite positioning developed by the Dinas Pertanian which uses satellite imageries updated twice a month. Built-in tools allow the identification of different crops, and their vegetative state, which will be used as a proxy to classify areas with and without access to irrigation. Mesindo will also develop a cost/profit model based on topography that would help accelerate the identification and implementation of irrigation interventions. Dinas PU and Pertanian have also committed to providing more information on land available for irrigation expansion – both have already provided some high level description of expansion locations. With the newly appointed staff TIRTA will be able to dedicate more time in the coming weeks and months to explore the locations and assess the expansion capacity.

Expand and cultivate the pool of potential partners. TIRTA has identified a few younger actors among the service providers with more appetite for expansion, and some village heads with genuine concerns for village development. The relative new rice miller associations in the three districts are headed by younger owners eager to collaborate to achieve impact. Discussions with the Millers' Association revealed that their reason to collaborate is for the millers to mitigate market constraints; to be better informed on the price and volumes produced in the different regions, and to look for ways to access the larger national market. Access to national buyers is not only good for the millers; TIRTA is also interested to collaborate with national rice millers who are also sourcing large quantities of different types of quality rice on an ongoing basis to fill their milling capacity. To ensure quality these millers also work with agro-input suppliers like Syngenta. Large millers (in combination with local millers) might become key scale-agents in expanding the TIRTA model.

Conduct irrigation fairs in existing and new districts. The rice GSD developed in the last Semester revealed a number of potential districts in East Java that will be investigated by TIRTA early in the next semester, starting from Ngawi, Madiun and Banyuwangi. Based on the growing experience and reputation in the region it is time for the programme to make use of the success stories and use them

² <u>http://mgis.pertanian.go.id/gis/</u>

as triggers for expansion. One or more commercial irrigation fairs in the regions co-sponsored by irrigation related companies should help increase the awareness on the existing opportunities in the irrigation sector. Through the promotion of irrigation services and equipment, larger companies and providers will promote their services while farmer groups and local irrigation providers will also increase their knowledge and find out who and where to obtain information on better irrigation practices. The fairs are expected to be a source of matchmaking between HIPPAs / farmers' groups and investors / service providers.

Investigate alternative irrigation management models. TIRTA is implementing interventions in two major programmes developed by the local office of the Dinas Pertanian, in Malo and Piyak with the assurance that the Dinas would support the implementation and if necessary allow the private sector to participate. The interventions provide technical but also HIPPA management related support with inputs from the private sector. As the interventions develop, the model will be promoted in three forms. First with the government; TIRTA will advocate for more management support for similar schemes and ask Public Work and the Ministry of Agriculture to promote the schemes. Many NGOs however still seem to believe in this (cooperative) approach. TIRTA could propose a "Build-Operate-Transfer (BOT)" type of irrigation operation, with the support of NGOs which transfer the scheme as they reach a certain turnover/ maturity. As a third alternative, the farmers' groups could be invited to have their irrigation scheme run by an outside private "management irrigation" operator which would operate the irrigation scheme against a fixed fee. TIRTA would first invite NGOs and management irrigation operators (or proxies) to develop and present related proposals to be tested using the programme experience, management training, actual irrigation processes, cost calculations and business plans.

Streamline construction procurement through Partnership Agreement (PA) as opposed to MoU, The existing knowledge within the team and AIP-R Operations has increased thanks to recruitment of staff with sound technical background and exposure to infrastructure development. Specialised staff part of a panel now assesses the vendors in charge of implementing interventions. The improved knowledge allows for TIRTA to now move from MoUs to PAs, whereby the initial designs and implementation plans are agreed on and where the partner implements the whole project while TIRTA reimburses a share of the costs. This will streamline the procurement and construction process, relieve TIRTA of the time-consuming subcontracting, and also reinforces the legitimacy of the partner as an irrigation provider. Nevertheless, in the long run TIRTA expects the co-investment in technical aspects to be less prominent and limited to innovative design and technology and only pilot site-construction. This is tested in initially with a new partner and will be tested with Pak Achsin and Pak Arifin in the new interventions developed with them. With this optimisation the time lag between the agreement of the partners and *water flowing* has and is expected to be further reduced.

3 Cross cutting issues

3.1 Results measurement

Monitoring and Results Measurement (MRM) and the Results Measurement Manual have been integrated for all AIP-Rural programs. The MIS Power BI, QMT and ISD tools are functional and the program is now using this system for data aggregation. The coordination between the Results Measurement and Learning (RML) and MIS teams resulted in minimum fixes to the system and reliable data during this semester's results aggregation. This has saved staff and management time, and we expect the process will be even more efficient as we move forward.

During the first semester of 2017, the RML team greatly increased its capacity through on the job coaching, the DCED training, the cross-learning and additional resources eased by the integration and one additional staff. The team conducted three IAs covering productivity enhancement from the Syngenta intervention and one covering irrigation.

Preparation for the August DCED Pre-Audit for TIRTA (together with SAFIRA and ARISA) is in progress to meet DCED control points, in terms of availability and the quality of the documentation. In

March, a roadmap was developed by RML staff from each project with the support of PRISMA, and a DCED consultant will deliver the pre-audit.

In the next semester, RML will complete 6 impact assessments and 4 baselines; all IAs will include recommendations from the WEE Implementation and Result Measurement Specialist to enhance TIRTA's ability to capture changes in WEE.

TIRTA staff will work together with SAFIRA's and PRISMA staff to provide technical assistance and support in developing and conducting CAPI assisted surveys.

3.2 Gender and social inclusion

TIRTA accomplished major progress with regards to mainstreaming gender in the programme, especially in the diagnostic phase of the intervention cycle – critical to design inclusive interventions and improve results. The team conducted 8 gender assessments, which serve to preliminary evaluate the women's economic empowerment (WEE) potential of the intervention and to suggest safeguards and action points to further boost positive impact. Recommendations are included in each Intervention Plan. TIRTA also conducted two WEE qualitative impact assessments, with Linda Jones' support, and will conduct 6 additional ones in the next semester. The team capacity to identify risks and positive triggers to WEE was enhanced and will continued to be strengthened – one SBC and one MRM BC have been identified to become "gender champions" within TIRTA to enhance TIRTA's ability to generate and measure WEE impact.

The FGDs equipped the team with a better understanding of gendered labour division, and substantiated the findings incorporated in the gender strategy, which suggest that access to irrigation is likely to lead to positive WEE³. As irrigation is accessed at the household level, and female and male participation in rice farming is balanced, the access dimensions of WEE (services i.e. irrigation and opportunities i.e. increased demand for paid-labour) are directly improved by the programme, and are expected to lead economic advancement. With regards to agency, the balanced control over income and women's contribution to decision making within both productive and reproductive domains imply that access to irrigation and the resulting economic advancement may stimulate greater agency, meaning that women's decision-making authority and voice may also increase. Finally, impact on workload is carefully monitored, as additional production cycles of a labourintensive crop, such as rice, could worsen women's time burden, should part of their reproductive work not be shifted to other members of the HHs or third parties. Yet, FGDs and informal interviews suggest that both female and male farmers are satisfied with increased workloads, as it leads to economic advancement, justifying the trade-off. Therefore, although the male dominated nature of irrigation limits the potential of the programme to catalyse transformational change to women's roles in the sector, the foreseeable impact on WEE is positive. The impact assessments next semester will be instrumental to assess changes in WEE and provide sufficient evidence to showcase TIRTA's results.

At a project level, the team has achieved some progress in using data on women's roles in rice farming and as decision makers/budget holders to commit Syngenta and Hextar to pilot more inclusive activities. This semester 85% of GAP trainings participants are male farmers, and 15% are female farmers⁴, which reflects the higher involvement of male farmers in crop-protection. The training sessions for next semester will have a 50:50 women to men target, and strengthened monitoring and impact assessments to test the commercial case for input suppliers to target female as well as male farmers in their sales and marketing. Syngenta also proposed the replication of a "women financial"

³ TIRTA has adopted and adapted the five non-negotiable dimensions of women economic empowerment:

¹⁾ Economic advancement – increased income or improved return on labour;

²⁾ Access to opportunities such as skills development, jobs or market linkages;

³⁾ Access to assets, services and needed supports to advance economically;

⁴⁾ Manageable workload through efficiency, technology and supports

⁵⁾ Women's greater agency, intended also as decision making-authority and voice in different spheres, including production, household finance, community-level matters.

⁴ 115 male farmers and 20 female farmers. As noted in the access section, these only cover the first session of Hextar training in Leran 3, one session from Syngenta in Malo and in Leran 2.

literacy training" that was piloted as part of their "Score Community program". The training seeks to improve the cash-flow and overall financial management at the HH level, while promoting Syngenta's crop protection package as a strategy to increase sales. This opportunity will be assessed in the first months of semester two.

AIP-Rural finalised the Gender Inclusion Strategy^[1] for PRISMA, TIRTA and SAFIRA in April 2017, and the program now has a unified conceptual and strategic plan for gender inclusion in agricultural market systems. The strategy was developed taking into account the over program strategy, the DFAT Gender Equality and Women's Economic Empowerment (WEE) Strategy, the program's own experience and other literature on gender mainstreaming in agricultural and financial programs. This strategy will be further socialised with all staff and the new cohort 5 during the next semester through our strategic consultant Linda Jones.

The Deal Making Guidelines were updated recently to provide guidelines during partner negotiations to incorporate more women in the business model. These include highlighting the business case of including women rather than only inclusion, used evidence to support the benefits of thinking about women in the business model, and actively showcase our interventions where women play a critical role in the market. The goal is to build partner commitment to see women as an economic force, and actively invest in women, mobilise female staff and female owned intermediary service providers. A "Deal Making Training" is planned for next semester, where all staff will familiarise with the updated guidelines.

AIP-Rural has a well formed strategic level approach to gender and assessment tools, but over the next semester the program aims to develop an approach on a practical level moving beyond gender mainstreaming to providing the tools for teams to identify and build business cases to incentivise partners. A consultant will join in the next semester to strengthen the program's deal making and results measurement at the implementation level to identify current opportunities, and strengthen WEE design, pitching, negotiations, and results measurement strategies to further improve the initial business case and ultimate impact on women. The role of the consultant will be less of a strategic reviewer but more of a capacity builder working closely alongside teams to put strategy and deal making guidelines into best practice for implementation and measurement.

A disability empowerment training will be held in upcoming semester for the program. This training is designed to build awareness of the program team to have kknowledge about the current situation and context of disability inclusion in markets for development, and to allow opportunity to take forward disability inclusive practice in AIP Rural. This activity will involve PRISMA, TIRTA, ARISA, SAFIRA and PRISMA's co-facilitators.

3.3 Environment

The environmental impact assessment study of Bojonegoro, the UKL-PKL, was finalised as planned by July 2017 by Haskoning. The implementation of the study on the impact of the TIRTA program in the local districts, up- and downstream from the planned intervention areas implied public hearings and required close monitoring by the TIRTA's implementation team. It was processed by different local government administrations, public works, the investment promotion board and the environmental office. As this exercise relied heavily on key resources from the TIRTA team and as the majority of the TIRTA interventions will continue to take place in Bojonegoro, and only to a limited extent in Tuban and most probably not in Lamongan (because of the inexistence of irrigation expansion opportunities) it was decided not to extend Haskoning's contract due to terminate by the end of July 2017. TIRTA is negotiating a settlement for work/deliverables partly implemented in Tuban / Lamongan.

The overarching conclusion from the EIA study for Bojonegoro is that no significant environmental impact can arise from the programme. This is mainly because the irrigation schemes

^[1] AIP Rural Gender Inclusion Strategy consist of gender inclusion goals, key elements of the strategy, roles and responsibilities of the team members, integration of gender & women's economic empowerment into result measurement and learning, and the further steps.

facilitated by TIRTA are small-scale and often cover improvements and rehabilitation as opposed to new construction.

Since early December a local environmental expert ensured that the environmental risk assessment occurs at all stages of the interventions and is documented. The expert has conducted assessments on the sites where interventions have already started (Pilanggede, Malo, Piyak, Kemiri, Leran 3) and developed recommendations where necessary. Since May 2017 all the intervention Plans (Leran 3, Besah and Bakalan) include the highlights of the key environmental risk assessments and, if necessary, recommended solutions. Even in low risk situations the expert makes recommendations on mitigating actions. Although limited, the main adverse impact is related to the risk of riverbank erosion and sedimentation which mitigation entails strengthening the river bank and/or foundation of the pump station. This mitigation strategy has been already implemented in Leran 3.

On June 19, 2017 the expert has provided a training to the TIRTA team on the environmental screening process and the related mitigation process. The process is now fully integrated in the intervention life cycle. The expert is expected to start upgrading the knowledge and behaviour of the irrigations providers in early August. TIRTA will continue to ensure that all environmental safeguards are applied in its interventions and closely monitor the implementation of the necessary mitigating measures.

TIRTA has been tendering for an expert to write an Environmental Protection Strategy (EPS) to further strengthen TIRTA's environmental risks management. The EPS will contain: (i) The identification of environmental risks in TIRTA's operational area, (ii) The overall approach on how TIRTA will manage identified environmental risk, (iii) How TIRTA will promote innovation and best practice in environmental protection and sustainability, (iv) What TIRTA will do to ensure that "do no harm" approach will be taken, and; (v) The development of a short case study around the background to what we are doing, the approach we are taking and the result/s and lessons. TIRTA is at present negotiating a contract with an expert who designed DFAT's environmental safeguards and policies. She will be available by the end of August – beginning of September and write a first EPS reflecting the points above.

The need for a special study on the Solo Bengawan River level is being assessed. When negotiating the EIA, the potential impact of water extraction and possible risks of river level depletion was raised. This risk was repeated during the evaluation mission by the Ministry of Public Works and especially the BBWS, the Government body in charge of the Solo Bengawan river. CSIRO's support is instrumental in identifying feasible and effective solutions to the implications of irrigation on the river flow of the Bengawan Solo river where all the irrigation pumps are located. Recent communication with BBWS indicate that the government body considers that the impact of the programme i.e. the irrigation of 3,500 ha will have only a minimal impact on the river water level. TIRTA is following up on the issue.

3.4 Communications

In March 2017, a Communications Manager and Communications Coordinator joined AIP-Rural. The new team have since started working on pending housekeeping items, including updating various document templates, developing new tools for program communications tracking, a photo and video library, revamping the website, and developing new baseline materials.

The communications team supported AIP-Rural in several major events this past semester, including TIRTA's Key Stakeholders Workshop in Tuban. Communications have also developed event support documents, including event checklists and visit guidelines.

An overarching AIP-Rural Stakeholder Engagement Strategy is another communications initiative, which will be used as base guidance for communications and engagement efforts to AIP-Rural stakeholders. The output of this strategy will provide guidelines on levels of engagement to different types of stakeholders and audiences, as well as provide indicators to measure the effectiveness of engagements.

In the next six months, the unit will revisit its Communications Strategy, based on the findings and conclusions from the Stakeholder Engagement Strategy, aiming to maximise reaching out to the right audience with the appropriate level of effort to gain optimal results. New communications tools focusing on different program and project audiences will complement this strategy, including new project and program profiles, provincial profiles, commodity/intervention factsheets and a partners' deck. Another communications initiative is the development of Audio/Visual materials in the form of video and stories which can be used by AIP-Rural when communicating with external stakeholders.

TIRTA's website content has further been updated and edited to comply with the overall AIP presentation. TIRTA is also spearheading the introduction of communication tools to be used to inform and engage potential partners by using video material describing the programme's objective, strategy and implementation method in a language adapted to the target group's characteristics.

3.5 Risk management

AIP-Rural combined risk management for all projects this semester in one matrix, discussed quarterly during the CMT meetings. Risks were categorised as overall program risks to AIP-Rural, and project specific risks to SAFIRA, TIRTA and PRISMA. The AIP-Rural program risks have not changed and include child protection, fraud risks, environmental risks and security.

The aftermath of La Nina may reduce the demand for irrigation in the second dry season, delaying TIRTA's ability to generate outreach and lowering partner's profits, which may delay additional investments. TIRTA strengthened the team's ability to develop and monitor projections, which will allow for greater responsiveness and adaptive strategy in the following months should the forecasted whether patterns affect TIRTA's interventions timeline. One location where yields have been particularly affected by La Nina was selected for intensified trainings on crop protection and in-kind credit provided by the partner to reduce the risk of a repeated crop failure.

TIRTA will continue to closely monitor environmental risks, and switch the emphasis from the EIA to a more strategic Environmental Risk Strategy focused on the particularities of the TIRTA programme. Together with a strengthened team, the environmental expert will further hone TIRTA's internal processes and risk management tools to use during the intervention design and implementation.

The risks associated with low/insufficient staff capacity were de-escalated further – TIRTA hired one additional MRM BC and will hire 4 additional implementation staff. 2 BCs (one of which will replace an existing one), 1 SBC and 1 PBC are expected to start in September. The Young Professional contract is planned to be extended until the end of the year to ensure a smoother hand-over process and to allow further capacity building and coaching to existing and new implementation and MRM staff.

4 Stakeholder relationship management

4.1 Government of Indonesia national and sub-national agencies

A PCC meeting with field visits was conducted on 15-16 June, 2017. Overall, the MoPW supports TIRTA's programme and approaches. It agrees with the selected locations and encourages more coordination with the Solo Bengawan River Body (BBWS). It looks forward to increased advisory and infrastructure support for the HIPPAS and expects TIRTA to recommend more water saving planting patterns and help from TIRTA to market the commodities that do save water.

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The Head of Dinas of Agriculture in Bojonegoro is very supportive of the TIRTA's activities and said to be willing to facilitate the coordination between the private sector, HIPPAs and farmer groups

and the Dinas. He will further ease the collection of information from the Dinas on potential areas in Bojonegoro which require irrigation and are not targeted by government programmes.

A Key Stakeholder workshop was held in Tuban on May 19 and kick-started the coordination between TIRTA and the Dinas of Agriculture and Public Works from Tuban District. 20 government representatives from related Dinas and 16 village representatives (Camat and Village Heads) participated in the event. The results were positive – although the parties raise questions around the availability of land in the district, TIRTA's activities as well as the private sector role in tertiary irrigation seemed valued by most participants.

In its effort to process the Environmental Impact Assessment study, TIRTA has liaised with the Dinas of Public Works of Bojonegoro which "initiated" the related document UKL -PKL, further approved by BKPM and the Environmental agency. As initiator, the Head of the Dinas is also taking responsibility for EIA's implementation. A public hearing to socialise the implementation of the EIA in the TIRTA's intervention locations was attended by representatives of 24 villages and 10 sub-districts.

TIRTA also gradually started working on improving coordination with the national government **bodies.** A monthly update on TIRTA's activities is compiled by AIP-Rural's Provincial Manager for East Java to be submitted to BAPPEDA. A regular update is also sent to Ministry of Public Works through AIP-Rural's Liaison Officer.

As the Indonesian government is still committed to support the country's food and rice selfsufficiency and sustain its expansion efforts by building more than 500,000 ha nationally and 80,000 ha/ year in East Java, more insights on how the government intends to achieve this, needs to be analysed. The role of the private sector especially at the tertiary level needs to be considered from different entry points (thematically, financially, geographically). Forums and workshops are envisaged to encourage more concentration and develop pragmatic and programmatic recommendations. In the next semester TIRTA is planning more activities around lessons learned with the Ministry of Public Works and Ministry of Agriculture.

4.2 Private sector partners

TIRTA is partnering with five private sector irrigation providers and looking at three additional ones as part of the pipeline, and two G-HIPPAs. These includes large and medium size entrepreneurs who have various degrees of experience in irrigation. TIRTA's new partners proved more dynamic and amenable to invest in irrigation and adopt new approaches; brokering new deals was relatively quicker, both thanks to improved capacity and the ability to showcase TIRTA's proposition and results. At the same time, early partners have renewed their commitment and willingness to continue to invest in irrigation, while showing more interested in testing new business models.

The two G-HIPPAs share similar constraints, weak management and institutional capacity prevents them to fully exploits the potential of their schemes, besides the improvements achieved. The results from the first operation season, and the management training and coaching will reveal to what extent and at what speed the G-HIPPAs can improve their performance.

The pipeline includes one new interventions with a BUMDES which will allow the programme to test an alternative business model that may be most suitable for partnerships with HIPPAs, and will add versatility to the portfolio.

Interventions with Syngenta and Hextar will continue throughout next semester and additional agriculture input suppliers might be approached to replicate similar models. TIRTA is investigating the opportunity to partner with NUFarms, which fertiliser factory is in Ngawi, one of the new potential districts.

While the partnership with Mesindo will continue, the programme will initiate crowding-in with other irrigation inputs suppliers. Interactions with Grundfos, Torishima and Ebera will be intensified early in the second semester. Although the larger irrigation equipment manufacturers and suppliers

often have technical promotion and training units, these are underused and the companies rarely coinvest in any local private training or related advisory service. However, Mesindo is proving that business can be made in the irrigation consulting service. These companies should be interested to sell more of their products, both for the replacement of the existing systems & for the new sales or maintenance contract – a way to "secure" their income & branding in the longer term rather than the short term standard unit sales. They would be interested to be involved in the design stage, giving them an opportunity to show their product performance under optimal configuration while proposing a "1-stop shopping" solutions with a minimum risks & optimum budget. One of TIRTA's new recruits is an ex Grundfos employee, whose networks and knowledge of the business are expected to quickly trigger new partnerships.

Contingent to progress in the early months of next semester, TIRTA may approach other private sector companies which current businesses have evident yet untapped links with the irrigation sector.

Major players in the water industry such as Indo-Suez, Veolia, Thames have missions and business models that could be adapted to irrigation. Lack of awareness of the opportunities to diversify their service and the dynamics of agricultural business are likely the main hindering factors that prevented them from approaching the irrigation sector. TIRTA could explore the opportunities with these key actors to better understand the situation; a forum could be organized analysing the key opportunities and challenges; regulatory constraints, role of ministries at national and local level showing how open /organized the sector is, mapping and describing the key players in the market and the potential links with local players, map up the market feasibility, show the significant returns and sustainable business models that can be envisaged. Returns should be much higher than in the clear water distribution as irrigation water is distributed for productive reasons, with immediate control on the returns by the consumers, whereas in clean water the solvability of the consumers are much more elusive.

Locally the engineering companies such as Haskoning, Mott Mac Donald and Arcadis appear to understand the paradigm as well as the fact that the demand for irrigation is significant. They are part of large international water fora where these types of cases are highlighted. Currently they mostly prefer to advise and coach rather than invest and act. Yet, their existing offer is well suited to respond to needs for design and engineering services.

4.3 Other AIP-Rural programmes

TIRTA supported SAFIRA in the development and implementation of a rice value chain finance study across Bojonegoro, Tuban and Lamongan. The results from the study are expected to lead to an intervention with financial institutions to facilitate the adoption of Syngenta's products. In view of TIRTA's partnership with Syngenta the model could also be promoted across TIRTA's partners.

TIRTA is steering a rice working group which led to the implementation of the East Java rice sector study conducted by Promark. The rice GSD, result of the study, includes a number of intervention areas specific to irrigations. The progress with implementation will determine the extent to which these will be further explored. The most likely intervention to be pursued in the short term is a partnership with the local and national rice millers association for the promotion of irrigation as a vertically integrated business; an ICN is being developed together with Promark. Other intervention areas include irrigation technology for challenging topographies in partnership with irrigation inputs suppliers; the testing and promotion of water saving techniques (intermittent irrigation) and; the development of an Irrigation Service Provider franchising model. The GSD includes also intervention areas common across the programmes, which should aid to increased collaboration. Synergic areas cover irrigation equipment leasing, promotion of new varieties of HYV seeds, non-subsidised fertiliser and pest/disease management and ICT to improve market coordination.

5 **Operations**

5.1 Operations

In accordance with the recommendation by the MTR, the operations team transitioned to an integrated 'One Operations' model by end 2017. This required adjustment to the Operations team structure with TIRTA operations staff transitioning away from a TIRTA only focus and taking on broader support. The TIRTA Operations and Finance Manager initially provided support across procurement and contracts, as well as finance and is now 100% dedicated to the finance unit providing additional support in the role of program accountant. The TIRTA Admin Assistant is now providing support to operational procurement across the program.

All programs are now following the same processes and the re-structure has achieved the improved efficiencies envisaged. Following the Operations team retreat, staff developed and signed a Code of Core Values that has seen a continued improvement in team coordination and communication as they adjust to their new roles. MIS was separated from Operations and now reports to the Deputy General Manager.

Operations support to TIRTA team continues to be strong and the team has been provided with on-the-job training to learn existing processes. Minor modifications have been made to some templates to reflect some of the unique differences of TIRTA. Support is provided across finance and budgeting, travel, procurement, partnership agreements, consultant contracting and human resource requirements.

5.2 Personnel management

One SBC and one MRM BC joined the programme in the current semester. Both completed a detailed month-long induction programme consisting of both classroom and one the job training. The SBC also attended the M4P training delivered by Springfield and the DCED training.

Planning for Cohort 5 started in March/April with assessments and interviews undertaken in July. New staff (1 SBC and 2 BCs) will join the program in September and complete a detailed month long induction program consisting of both classroom and on-the-job training. A PBC role was also conceptualise to closely support alongside the TL in relation to the strategy of the overall programme, reporting and communications with DFAT.

The capacity of the staff was improved through a number of trainings and workshop; these included the Springfield M4P training for 1 SBC; one short training on M4P and the DCED standard for all SBCs, BCs and DTL, conducted by the Project Director and a DCED consultant; the week-long DCED training attended by the MRM BS, one SBC and the TL; three-day advanced DCED workshop for MRM staff; all TIRTA implementation staff attended two dead making workshops, one covering gender inclusion and the other focusing on the government.

5.3 IT and MIS

The MIS system is now fully functional with 25 tools already available, which will be socialised with staff during the next semester. Important tools to socialise are the Power BI dashboard and document library, and eventually SharePoint pages for teams to better organise tasks and data real time for knowledge transfer among staff.

In this period TIRTA made substantial improvements to the IT system in the Bojonegoro office, these include upgrading the network and internet (with backup line), installing a PABX system, printer server, additional wireless access points and CCTV for security.

Annex 1 – Intervention Progress

1. Pilanggede

Issue at the core	Cause	Root cause	Intervention Area	TIRTA's Intervention Idea
Limited irrigation supply	Sub-optimal returns and high risks from irrigation	Low crop productivity	Productivity Enhancement	Integrated Crop protection with Syngenta
	provision	High incidence of pest outbreak	Irrigation Expansion	Irrigation TA

Haji Achsin is a local entrepreneur and small irrigation provider (he owns a rice mill and a warehouse). He's been serving 50Ha or rice fields in Sarirejo since 1992. Over two decades later he's been asked to expand his service and irrigate Pilanggede (~240 Ha) but he agreed to irrigate only 60Ha in Kaligede hamlet due to the low average productivity (~6MT/Ha) in the area and the high incidence of pest outbreaks.

Challenges and Constraints

The low average productivity and high incidence of pest outbreaks is caused by:

- Farmers' limited knowledge of crop protection which leads to inappropriate pesticide selection and dosage
- Limited extension services -
- High price of pesticides

Vision of change

Improved knowledge of crop protection, as a result of embedded provision of GAPs by input suppliers, and provision of in-kind credit by the irrigation service provider, increase the volume and quality of rice production, lowering the risks borne by the irrigation providers and increasing returns from irrigation thus allowing for further expansion and increased sustainability.

TIRTA approach

To achieve this vision TIRTA partners with Syngenta and the investor Haji Achsin to establish an integrated business model: Syngenta conducts two demoplots and trainings on crop protection using the Gromore technology and dedicate additional resources as necessary; Haji Achsin, further supports adoption through inkind credit (Syngenta pesticides).

Progress and signs of systemic change

The demoplots, trainings, and Syngenta's presence in Pilanggede convinced Haji Achsin to proceed with a first expansion (100 Ha) and later on a further 60/70 Ha expansion. He also provided in-kind credit. In view of the investor's commitment and the potential replication of the model in another location TIRTA decided to co-invest in the construction of the canal (together with Achsin and the village administration). Phase 2 is now operational.

In view of the high quality irrigation service provided by Haji Achsin, he was approached to expand his business in Kedungbondo. He independently invested additional IDR 233,485,000 to provide irrigation across 80 Ha, serving 248 HHs. He is currently looking at replicating the provision of in-kind credit.



Figure 5 Irrigation expansion plan Pilanggede

Summary of key indicators (June 2017)

KPI	Description	Cumulative 17S1	Actual 17S1	Projected 17S2
KPI1	Number of farm HHs who increase their income due to AIP RURAL Interventions	304	-	151
KPI1a	Number of farm households under \$2.5 PPP poverty line with increased net-incomes	222	-	110
KPI2	Net Additional attributable income for targeted All farm HHs	2,516,439,734	16,109,434	2,636,130,709
KPI2a	Net attributable additional incomes of farm households under \$2.5 PPP poverty line	1,836,034,440	10,793,321	1,924,375,418
KPI3	Number of Intermediary Service Provider (ISP) with increased turnover	2	1	-
KPI4	Value of additional turnover of Intermediary Service Providers (ISPs)	811,472,050	291,472,050	2,639,187,050
KPI5	Number of Intervention	1	-	-
KPI6	Number of initiative taken by government to improve Business Enabling Environment (BEE)	0	-	-
KPI7	Number of intervention partners (private sector and public sector)	3	-	-
KPI8	Value of investment by private sector partners (IDR)	1,767,970,000	496,185,000	59,433,333

2. Leran 2

Issue at the core	Cause	Root cause	Intervention Area	TIRTA's Intervention Idea
Limited irrigation supply	Poor irrigation design and state of infrastructure	Limited irrigation technical capacity -	Irrigation Expansion	Irrigation system assessment – Technical and economic feasibility study <i>Quick-fixes</i> to improve the infrastructure and the system performance

A JICA funded programme provided a pump station to Leran village and a HIPPA was established to manage the scheme. In 2015 the HIPPA submitted a proposal to the Dinas Pertanian to replace the Japanese pump which was no longer working – the government provided a pump in 2016. However, once the HIPPA received the pump they did not have sufficient working capital to operate the pump station and asked Mr Kusnadi (a local entrepreneur) to manage the scheme.

Constraints and challenges

Leran 2 presents constraints at two levels:

- Site establishment -, where **poor technical knowledge** resulted in **poor infrastructure design** and related **hydraulic inefficiencies**;
- Lack of training on O&M and overall irrigation management led to sub-optimal irrigation (and low returns) and deterioration the infrastructures.
- The takeover from Kusnadi, a local entrepreneur, where **poor technical knowledge impedes the** required technical improvements and ultimately irrigation provision

Vision of change

Access to irrigation technical assistance improves the of the irrigation provider, thus improving the quality of the irrigation service and increase returns, while farmers increase their income as a result of a high quality, stable irrigation provision.

TIRTA approach

- Assess the irrigation infrastructures provided by the government and the overall design in order to gauge the maximum potential of the existing pumps and system;
- Develop a technical and economic feasibility study;
- Share the main recommendations with the investor and system operator;

Progress and signs of systemic change

The pump assessment identified pump location and suction-pipe size as the most significant factors that currently reduce pump's efficiency by around 53%. The study also suggests that several modifications, such as the use of a booster pump should be made to achieve the maximum capacity of the pump. A *quick fix* to the suction pipe was suggested by the consultant - the pump operator followed the suggestion soon after the meeting with TIRTA team in early September (primer pipe).

The primer pipe doubled the pump capacity which immediately allowed the water flow to effectively irrigate the 17 Ha south of the rain where farmers were using a combination of lift and groundwater irrigation due to frequent pump failures and intermittent water provision, and a further 13 Ha expansion.

The partner independently invested IDR 60,500,000 to expand his service by 10 Ha.

Summary of key indicators (December 2016)



Figure 6 Irrigation expansion plan Leran 2

KPI	Description	Cumulative 17S1	Actual 17S1	Projected 17S2
KPI1	Number of farm HHs who increase their income due to AIP RURAL Interventions	64	14	10
KPI1a	Number of farm households under \$2.5 PPP poverty line with increased net-incomes	45	10	8
KPI2	Net Additional attributable income for targeted All farm HHs	334,968,619	26,826,396	-
KPI2a	Net attributable additional incomes of farm households under \$2.5 PPP poverty line	234,478,033	18,778,477	-
KPI3	Number of Intermediary Service Provider (ISP) with increased turnover	1	-	-
KPI4	Value of additional turnover of Intermediary Service Providers (ISPs)	150,000,000	-	-
KPI5	Number of Intervention	1	-	-
KPI6	Number of initiative taken by government to improve Business Enabling Environment (BEE)	0	-	-
KPI7	Number of intervention partners (private sector and public sector)	1	-	-
KPI8	Value of investment by private sector partners (IDR)	260,360,000	67,535,000	-

3. Malo

Issue at the core	Cause	Root cause	Intervention Area	TIRTA's Intervention Idea
Limited irrigation supply	Poor irrigation design and state of infrastructure	Limited irrigation technical capacity	Irrigation Expansion	Irrigation system assessment – Technical and economic feasibility study
	Sub-optimal returns from irrigation	Low average productivity and risk of pest outbreaks	Management Capacity	Design and infrastructure improvement
			Productivity Enhancement	G-HIPPA Management capacity building
				GAP training

The intervention covers 7 villages in Malo (2,195 potential farmers) with a distinct hilly terrain – a topography which makes irrigation **technically complex**. As such challenges have not been overcome by local actors, farmers in Malo are currently only able to cultivate one crop of rain fed paddy a year. Furthermore, due to several pest outbreaks the **crop productivity is low**, increasing the risk of investing in irrigation provision, and thus adding to the constraints the local actors are facing. In 2015 the **government has provided a pump station to the G-HIPPA** in Malo, which is claimed to have **the potential to serve 600 Ha** across the 7 villages, yet the existing irrigated land is only 65Ha.

Constraints and challenges

- **Poor technical knowledge** resulted in poor infrastructure design and related hydraulic inefficiencies
- Lack of training on O&M and overall irrigation management led to sub-optimal irrigation (poorquality, low returns and no savings/reserves) and deterioration the infrastructures

Vision of change

Access to irrigation technical assistance improve the design and thus the performance of the irrigation schemes, while access to management capacity building leads to improved management and returns that are re-invested in further expansion.

TIRTA approach

To achieve this vision TIRTA will:

- 1. Provide access to Irrigation Technical Assistance:
- Assesse the irrigation infrastructures provided by the government and the overall design in order to gauge the maximum potential of the existing pumps and system;
- Develop a technical and economic feasibility study;
- Share the main recommendations with the Dinas Pertanian and G-HIPPA Malo;
- Co-invest (proof of concept for best practice in irrigation design)
- 2. Partner with Syngenta to promote productivity enhancement
- Syngenta establish demosites and conduct trainings on crop protection;
- TIRTA conducts an agronomic assessment;
- TIRTA pilots complementary GAP trainings covering water management and organic soil matter management (with Syngenta) ongoing
- 3. Improve management capacity:
- Conduct a light touch capacity need assessment
- Deliver irrigation management training and coaching

Progress and signs of systemic change

The irrigation expansion has been partially adapted to TIRTA's recommendations. Although the total system capacity has the capacity to reach 120 Ha, the G-HIPPA is currently operating the system to cover 105 Ha in the current season. The system is expected to reach full capacity in the first dry season 2018.



2018 EXPANSION AREA Tambakromo, Sumberjo Village (80 Ha)

Figure 7 Irrigation expansion plan in Malo

120 Farmers trained in crop protection using Gromore (Syngenta) pesticides. The demoplots were very successful (9.6MT/Ha and the farmers requested more training to cover the expansion area in the comings season. An additional set of demoplots and training is conducted between semester one and two 2017.

The management capacity building started, and will follow with coaching throughout the season.

KPI	Description	Cumulative 17S1	Actual 17S1	Projected 17S2
KPI1	Number of farm HHs who increase their income due to AIP RURAL Interventions	58	58	126
KPI1a	Number of farm households under \$2.5 PPP poverty line with increased net-incomes	48	48	92
KPI2	Net Additional attributable income for targeted All farm HHs	22,756,529	227,565,296	266,000,000
KPI2a	Net attributable additional incomes of farm households under \$2.5 PPP poverty line	186,603,543	186,603,543	194,180,000
KPI3	Number of Intermediary Service Provider (ISP) with increased turnover	3	3	-
KPI4	Value of additional turnover of Intermediary Service Providers (ISPs)	16,776,000	16,776,000	-
KPI5	Number of Intervention	1	-	-
KPI6	Number of initiative taken by government to improve Business Enabling Environment (BEE)	0	-	-
KPI7	Number of intervention partners (private sector and public sector)	1	-	-
KPI8	Value of investment by private sector partners (IDR)	977,599,000	66,354,750	59,433,333

4. Kemiri

Issue at the core	Cause	Root cause	Intervention Area	TIRTA's Intervention Idea
Limited irrigation supply	Complex topography Sub-optimal returns from irrigation	Limited irrigation technical capacity Low average productivity and risk of pest outbreaks	Irrigation Expansion Productivity Enhancement	Irrigation system assessment – Technical and economic feasibility study GAP training

Kacangan, Sidomukti, Besah and Sekaran, four villages in Kemiri currently have no access to irrigation. The significant height and distance from the river increases the cost and technical complexity of irrigation in the area – a constraint that is yet to be resolved by the local actors. Finding an irrigation methodology and design that is both profitable for the irrigation provider and effective for the farmers to grow paddy, would lead to a potential 300 Ha of irrigated land, serving 1035 potential farmers.

Constraints and challenges

• Complex topography hinders expansion due to limited technical knowledge

Vision of change

Irrigation providers increase their technical knowledge and can supply irrigation profitably and effectively to land which is located far from the river and at high elevation, while farmer can access high quality irrigation and GAP, hence increase their productivity and incomes.

TIRTA approach

To achieve this vision TIRTA:

- 1. Provide irrigation Technical Assistance
- Assess alternative irrigation system designs;
- Develop a technical and economic feasibility study and investment plan together with the investor
- Co-invest to de-risk the investment from the partner



Figure 8 Irrigation expansion plan Kemiri

- 2. Partner with the investor to promote productivity enhancement
- Syngenta establish demosites and conduct trainings on crop protection

Progress

The partner accepted some technical recommendations as a result of the audit. The system is expected to serve 571 HHs. Demoplots and training delivered by Syngenta planned to start between July and August at the beginning of the planting season.

KPIs	Description	Actual 17S1	Projected 17S2
	Access	571	50
	Use	0	416
KPI1	Number of farm HHs who increase their income due to AIP RURAL Interventions	0	21
KPI1a	Number of farm households under \$2.5 PPP poverty line with increased net-incomes	0	15
KPI8	Value of investment by private sector partners (IDR)	273,245,000	584,433,333

5. Piyak

Issue at the core	Cause	Root cause	Intervention Area	TIRTA's Intervention Idea
Limited irrigation supply	High risk and limited sustainability of irrigation	Inefficient technical	Investment facilitation	Attract private sector investment and facilitate agreement
	provision from capacity G-HIPPA	Management capacity	Peer learning and capacity building training	
	Limited capacity for expansion		Irrigation Expansion	Irrigation TA

A G-HIPPA was established in August 2016 in light of the planned irrigation expansion, partially funded by the National and District government, that should provide access to irrigation across five villages (Sedeng, Bakung, Sumber Wangi, Bungur and Simorejo). The extension is planned to take place in two phases: <u>Phase 1</u>: Where water from the river will gets to a water tank; the District Government directly builds the pump station and pays for and installs the main pipes and water tank (the infrastructure has been completed at the end of October); <u>Phase 2</u>: Additional main pipe to be installed from Sedeng to Bakung (to bring the water from the furrow in Sedeng to the furrow in Bakung). The G-HIPPA received the payment from National Gov in the last week of October 2016. This fund will only cover the material, where the labour etc. is covered by the G-HIPPA and was completed in February 2017.

Constraints and challenges

- **Poor irrigation design** implies the system can currently reach 183 Ha, and will need improvements to achieve full potential
- The G-HIPPA received the main infrastructures from the government but lacks working capital to operate the system;
- Lack of training on O&M and overall irrigation management poses a high risk of failure, suboptimal irrigation (poor-quality, low returns and no savings/reserves) and deterioration the infrastructures.

Vision of change

Local investor(s) supply working capital and supervise operations for a share of the output, while farmer can access high quality irrigation and GAP, hence increase their productivity and incomes. The capacity of the G-HIPPA to manage the scheme is improved through access to irrigation management training and coaching.

TIRTA approach

- 1. Co-investment facilitation
- TIRTA approaches a number of investors that are interested in partnering with G-HIPPA Piyak (and if the model is successful replicate in the future) by supplying working capital and technical oversight
- TIRTA will facilitate TA to audit the system and the planned expansion
- 2. Improve management capacity
- Conduct a light touch capacity need assessment
- Deliver irrigation management training and coaching

Progress

TIRTA identified four potential investors, one of which provided working capital for the rainy season (50m). All four preliminarily agreed to provide the working capital for the next season contingent to the G-HIPPAs ability to coordinate with the farmers.

The management capacity building started and coaching will be provided throughout the season.

The irrigation audit identified a number of improvement options to solve the issues related to the inadequate location of the lift-pump and the multiple leakages in the pipe connections. The G-HIPPA already repositions the pump where recommended, and pre-tests during the repair shows higher discharge levels.



Figure 9 Irrigation expansion plan Piyak

KPI	Description	Actual 17S1	Projected 17S2
	Access	522	0
	Use	125	0
KPI1	Number of farm HHs who increase their income due to AIP RURAL Interventions	0	125
KPI1a	Number of farm households under \$2.5 PPP poverty line with increased net-incomes	0	88
KPI8	Value of investment by private sector partners (IDR)	50,000,000	9,000,000

6. Besah - New intervention

Issue at the core	Cause	Root cause	Intervention Area	TIRTA's Intervention Idea
No irrigation available	Complex topography	Limited irrigation technical capacity	Access to Irrigation Consultant service	Introducing/Promoting an irrigation consulting service to the Partner
	Sub-optimal returns from irrigation	High operational cost because of wrong design on the irrigation system	Good irrigation system design	Increase awareness of the Irrigation provider on the benefit deriving from improved irrigation system design and equipment

Besah, Sekaran, and Sidomukti, three villages in Kasiman sub district currently have no access to irrigation. The significant height and distance from the river increases the cost and technical complexity of irrigation in the area – a constraint that is yet to be resolved by the local actors. Finding an irrigation methodology and design that is both profitable for the irrigation provider and effective for the farmers to grow paddy, would lead to a total of 500 Ha of irrigated land, serving 1000 potential farmers. The irrigation provision for the 1st phase is to target 350 ha of unirrigated land, and a potential of 700 farmers.

Constraints and challenges

- Complex topography hinders expansion due to limited technical knowledge
- Sub-optimal returns from irrigation due to improper irrigation system design
- No access to irrigation consulting services

Vision of change

Irrigation providers have access to irrigation consulting services, improve their technical capacity and establish high performing irrigation systems to profitably irrigate land which is located far from the river and at high elevation, while farmer can access high quality irrigation, hence increase their productivity and incomes.

TIRTA approach

To achieve this TIRTA will:

- 1. Provides access to Irrigation Consultant Service and co-invest to de-risk the investment from the partner
- Facilitate linkage between irrigation provider and irrigation consulting service (also developed by TIRTA)
- Irrigation consulting company assesses the area and develop a technical and economic feasibility study and investment plan
- 2. Increase awareness of the Irrigation provider on the benefit derived from a good irrigation system design:
- Perform the cost-benefit analysis to show the benefit deriving from improved irrigation design



Figure 10 Irrigation expansion plan Besah

Progress

The partner hired Mesindo to develop the irrigation system design and also purchased three Torishima pumps as recommended. Construction is about to start, with operation planning to commence in September 2017.

KPI	Description	Actual 17S1	Projected 17S2
	Access	0	700
	Use	0	630
KPI1	Number of farm HHs who increase their income due to AIP RURAL Interventions	0	0
KPI1a	Number of farm households under \$2.5 PPP poverty line with increased net-incomes	0	0
KPI8	Value of investment by private sector partners (IDR)	217,050,000	755,375,000

7. Leran 3 – New Intervention

Issue at the core	Cause	Root cause	Intervention Area	TIRTA's Intervention Idea
Limited irrigation supply	High risks (real and/or perceived) from irrigation	Limited information on irrigation system design (Pump and Canal)	Access to irrigation consulting service	Increase awareness of the Irrigation provider on the benefit deriving from high quality irrigation system design
	Sub-optimal returns from irrigation	Low farmers productivity	Productivity Enhancement	Promoting the usage of improved inputs (fertilizer) & GAP training

Ngulanan and Sumbertlaseh villages currently have no access to irrigation. TIRTA approached the PS irrigation provider who currently irrigates Ngablak to stimulate the expansion of his business.

Constraints and challenges

- Limited information on irrigation system design (Pump and Canal) prevents the irrigation provider to expand further.
- Sub-optimal returns from irrigation because of low farmer's productivity, mainly due to poor application of fertiliser

Vision of change

Irrigation providers have access to irrigation consulting services, improve their technical capacity and establish high performing irrigation systems, while agriculture input suppliers provide GAP trainings promoted to irrigation users. Farmers access and use a rreliable irrigation system and good quality inputs, and GAP, hence increase their productivity and incomes.

TIRTA approach

- 1. Provides access to Irrigation Consultant Service and co-invest to de-risk the investment from the partner
- Irrigation consulting company assesses the area and develop a technical and economic feasibility study and investment plan
- 2. Producitivity Enhancement
- Hextar conducts demoplots and trainings to promote the usage of good quality (nonsubsidized) fertilisers.
- The irrigation provider facilitate links with local input retailers



Figure 11 Irrigation expansion plan in Leran 3

Progress

The irrigation provider followed the recommendations from the audits and initiated the irrigation expansion. The first 50 Ha are expected to be operation in S2Y17. Hextar piloted the technology and started the first training sessions, which will continue throughout the next semester.

KPIs	Description	Actual 17S1	Projected 17S2
	Access	335	240
	Use	0	196
KPI1	Number of farm HHs who increase their income due to AIP RURAL Interventions	0	0
KPI1a	Number of farm households under \$2.5 PPP poverty line with increased net-incomes	0	0
KPI8	Value of investment by private sector partners (IDR)	217,050,000	755,375,000

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Annex 2: TIRTA's partners details

Partners' Details			
Intervention 1	Irrigation Expansion and Productivity Enhancement in Pilanggede village		
Partner	Achsin		
Description	Achsin is a rice miller and owns and runs an irrigation business covering 160 Ha in two villages – which entity was formalised in 2015 under the name UD. Rosa Abadi.		
Partners rationale	Achsin wants to expand his irrigation business, starting from 150 Ha but the low productivity and high incidence of pest outbreaks, coupled with the poor quality of existing infrastructure prevent him from expanding his irrigation business to cover the available unirrigated land. His rational for expanding the irrigation business is very solid as the vertical integration allows him to generate higher returns from both businesses (irrigation and mill) as he will be able to source more unhulled-rice for his rice milling business.		
Partnership role	TIRTA supports Achsin with technical and business advice to improve the irrigation system and linkages to input suppliers (Syngenta) to provide in-kind credit to his farmers in Pilanggede.		
Intervention 2	Improve technical and management capacity of new GHIPPA in Piyak Sub District.		
Partner	GHIPPA Piyak - Sumber Barokah		
Description	G-HIPPA Piyak is formed and formally founded in August 2016 as G-HIPPA Sumber Barokah to provide irrigation in Kanor Sub-District – specifically five (5) villages namely Sedeng, Bakung, Bungur, Sumberwangi and Simorejo.		
Partners rationale	With the infrastructure provided by the government, GHIPPA Piyak has the responsibility to deliver irrigation service for 5 villages. However, the newly established GHIPPA Piyak is not ready to operate the irrigation service as it lacks the management and financial capacity to sustainably run the scheme. G-HIPPA Piyak is looking for support to improve their capacity. The design of the irrigation system is also poor and might require changes. With adequate capacity (technical and managerial), GHIPPA will operate the irrigation service sustainably.		
Partnership role	TIRTA supports GHIPPA Sumber Barokah with a series of training and coaching sessions to improve their capacity. The capacity development includes financial, technical on pump and water distribution, organisation and staff management. In addition to that, TIRTA also supports GHIPPA Piyak with access to irrigation technical audits and study in order toto redesign their irrigation system to gain better efficiency.		
Intervention 3	Improve technical and management capacity of GHIPPA in Malo Sub District.		
Partner	GHIPPA Malo Berkah Tirta Mandiri		
Description	In 2015 the government provided a pump station to the G-HIPPA in Malo, which was expected to cover 600 Ha across the 7 villages in Malo sub-districts Until early 2016, GHIPPA Malo operated the irrigation service, but could only cover around 65 Ha.		
Partners rationale	GHIPPA Malo is not equipped with sufficient capacity to sustainably run the irrigation business. Poor design of the irrigation system also prevents GHIPPA to operate the irrigation system at full capacity. They are looking for assistance to improve their management capacity and also for technical advice to redesign the irrigation system, particularly to improve the pump-station and distribution system to ultimately achieve full potential.		

Partnership role	TIRTA supports GHIPPA Malo to improve its irrigation system by facilitating access to irrigation technical consulting. On the management side, TIRTA also supports with financial, technical (pump and water distribution), organisational and staff management capacity building delivered by a third party (IPB)
Intervention 4	Recapture of irrigation Water: testing of the concept in Kemiri.
Partner	Arifin
Description	Arifin is a local entrepreneur, and irrigation provider currently serving more than 200 Ha in Bojonegoro and Lamongan districts.
Partners Rationale	Arifin wants to expand his irrigation business and needs supports on technical aspects to assess and design his irrigation system as the significant height and distance from the river increases the technical complexity to irrigate Kemiri area. Arifin is experimenting a new methodology to recapture the water to expand irrigation service for three neighbouring villages.
Partnership Role	TIRTA supports Arifin by facilitating access to irrigation technical consulting and improvements of the irrigation system, and linkages to ag. input suppliers (Syngenta).
Intervention 5	Improve technical irrigation system in Leran Village
Partner	Kusnadi
Description	Kusnadi's main business is rice milling and used to provide ground-water irrigation in the village as he owns 4 Ha of land in the area. More recently, he took over the management of an irrigation system from a HIPPA that ceased to operate due to poor capacity.
Partners rationale	Unproper installation of the pump station leads to low output from the pump. Kusnadi is looking for technical assistance to fix the pump station, to expand the irrigation service up to 50 Ha.
Partnership role	TIRTA provides access to irrigation technical assistance to increase the flow-rate of the pump station.
Intervention 6	Improve pump and irrigation system in Ngablak Village
Partner	Pawitnar
Description	Pawitnar is an irrigation service provider in Ngablak Village (Leran 3), Bojonegoro serving140 Ha of rice fields.
Partners rationale	Pawitnar would like to expand his irrigation business but he is concerned with the high operational cost and low returns in the area due to poor productivity and the fact the land is completely flooded in the rainy season. He is looking technical advice to reduce the operational cost for the current existing irrigation service, but also to expand his irrigation service.
Partnership role	TIRTA facilitated access to CV Multi Mesindo Jaya, an irrigation consulting business tofull audit of Pawitnar's irrigation system and provided recommendations to improve the existing design. TIRTA also facilitates linkages with ag. inpout suppliers (Hextar)
Intervention 7	Irrigation Provision through the promotion of Irrigation Consulting Services in the rice sector
Partner	Ronny Kurniawan
Description	Ronny's family owns the the biggest rice milling plants in Bojonegoro district. Since 2009, Ronny differentiated his business into irrigation business in Besah.Due to poor irrigation system design, he stopped the irrigation service in 2013.
Partners rationale	Ronny would like to restart his irrigation business but he lacks the confidence and access to irrigation technical advice to re-invest in the scheme as the previous attempt cost him 3 billion Rupiah. His rational for expanding the irrigation

	business is even stronger as the vertical integration allows him to generate higher returns from both businesses (irrigation and mill) as he will be able to source more unhulled-rice for his rice milling business.
Partnership role	TIRTA facilitates access to irrigation consulting services, Mesindo, which provides irrigation systems audits and design. As a result,
Intervention Area Productivity Enhancement	Introducing good agriculture practice in rice by working with irrigation provider (current combined intervention in Leran 3, will expand to others)
Partner	PT Hextar Fertilizer Indonesia
Description	Hextar Fertilizers Sdn Bhd was established in 2008 primarily to complement Hextar Chemicals Sdn Bhd's products. Since then, Hextar Fertilizers Sdn Bhd has grown from a fertilizer trader and manufacturer to a company that provides complete crop management solutions and services.
Partners rationale	Hextar wants to tap the commercial fertiliser market Entering the rice market through irrigation provider is considered a good marketing strategy for them. Partnering with TIRTA and irrigation provider is a cost-effective market opportunity for Hextar.
Partnership role	TIRTA supports PT Hextar Fertilizer Indonesia to develop distribution channels (sales agents/retailers) in Bojonegoro by working with irrigation providers to promote and distribute commercial fertilizer.
Intervention Area Irrigation Technical Assistance	Support the establishment of irrigation technical consulting services (Combined intervention in Leran 3 and Besah)
Partner	CV Mesindo Multi Jaya
Description	CV. Multi Mesindo Jaya (Mesindo) is a retailer for reputed pump brands (i.e. Ebara, Tourishima, Grundfos, and Sihi), based in Surabaya, East Java with years of experience.
Partners rationale	Mesindo is looking for opportunities to expand business and increase revenues. River irrigation is a new opportunity for
	them to market their products. Furthermore, providing the irrigation technical consultancy will diversify their business and provide them with a competitive advantage.
Partnership role	TIRTA supports Mesindo's business development, and technical capacity building and support to market their service.
Intervention Area Productivity Enhancement	Minimize Risk of Crop Failure through promotion of Crop Protection improved inputs and GAP with Syngenta (Combined intervention in Pilanggede, Malo, Leran 2 and others will follow)
Partner	PT. Syngenta Indonesia
Description	PT. Syngenta Indonesia is a world leading company in agricultural input, particularly agrochemicals, such as pesticides.
Partners rationale	Working with irrigation providers as opposed to marketing their products to individual farmers is a new business model for Syngenta It is considered a cost-effective market opportunity which will increase their sales.
Partnership role	TIRTA facilitates the business interaction between Irrigation Service Provider (Achsin) with Syngenta to provide in-kind credit of Syngenta's pesticides for farmers in Pilanggede. TIRTA supports Syngenta in delivering training, demoplot, and technical assistance on proper use of pesticides for farmers in Pilanggede, Malo, and Leran 2.

Annex 3: TIRTA QMT results

Scale	Change/Improve (2) Malo Piyak	Let Flow (4) Pilanggede Leran 2 Leran 3 Kemiri	Push (4) Besah (Kedungbondo – pipeline) (Bakalan – pipeline) (Leran 1 – pipeline)	
		Drop (1) / Ended Kedungprimpen	Under observation	on / innovate (2) cement (Syngenta and Hextar)

Probability of success

Annex 4: TIRTA Strategic Result Chain



Annex 5: TIRTA Implementation Workplan



