



Progress  
Report and  
Implementation  
Plan

# Tertiary Irrigation Technical Assistance

February 2018



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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	BUMD Desa = Village 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 results measurement
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

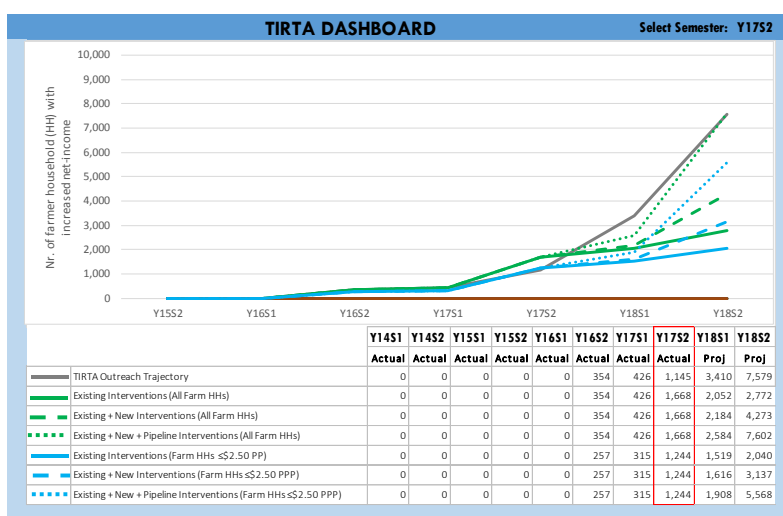
The objective of Tertiary Irrigation Technical Assistance (TIRTA) is to increase the income of 7,500 poor female and male farmers in East Java by 60% through stimulating access to tertiary irrigation. TIRTA is the second largest program under the Australia-Indonesia Partnership for Rural Economic Development (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.

This semester’s activities prioritised interventions with the highest potential to stimulate systemic change while ensuring the timely achievement of program’s targets. The strategy was underpinned by three principles which are aligned with the program’s exit strategy: i) Leverage a significant injection of capital into the irrigation sector by the private sector; ii) Promote innovations that allow sustained revenues, quicker return on investment, and lower risks, to foster high commercial interests and capacity in maintaining the schemes in the long-term, and; iii) Facilitate the establishment of irrigation technical assistance services in the market – a missing yet essential function that will aid in sustained investments in high performing irrigation businesses. In translating these principles into implementation, the program prioritised two interventions areas: irrigation technical assistance and integrated productivity enhancement.

## PROGRESS

- TIRTA focussed on timely intervention development and implementation, and achieved its portfolio targets with seven new interventions.** The program developed seven additional IPs and signed seven contract which shortly moved into the implementation phase and generated access within the semester. These strive to reach 1,913 farm HH by the end of 2018.
- Through its existing and new interventions, TIRTA benefited 1,242 HH (929 HH<\$2.50PPP), 523 HH over the semester projection of 719 HH, and 379 HH over the semester target of 863 HH.** This amounts to a cumulative total of 1,668 HH (1,244 HH<\$2.50PPP) since the beginning of the program. Contributions above projections mostly came from the adoption of irrigation technical solutions in Leran 3 which led to significant improvements in the 140 Ha existing irrigation system beyond the planned first phase expansion of 50 Ha.

FIGURE 1: TIRTA OUTREACH TRAJECTORY



- The expected cumulative outreach for existing and new interventions is 4,273 HH (3,137 HH<\$2.50 PPP) by the end of 2018 and 3,329 HH (2,431 HH <\$2.50 PPP) from the pipeline.** The projections are supported by stable and high conversion ratios from access and use into benefit and an improved projection method which accounts for risk ratings, tailored average land size, and delayed conversion from access to use to accommodate progressive use over time.

4. **The increase in cumulative, average net attributable income change (NAIC) per farm HH is 191% or AUD 630, considerably higher compared to the 60% program's target.** We expect this trend to continue with new systems becoming operational and those developed in the previous semester maintaining high quality standards.
5. **Other key performance indicators (KPI) reflect increasing levels of sustainability.** Average ISP turnover increased by ~270% to AUD 361,786 and the number of partners by five. Cumulative partner investments grew by 155% to AUD 907,699, and investment from farmers grew by 52% at AUD 963,980 – leading to a total co-investment to date of AUD 1,871,678.

TABLE 1: KEY PERFORMANCE INDICATORS

KPI	Description	Actual cumulative Y17S2	Actual additional Y17S2
KPI1	# Outreach (all farm HHs)	1,668	1,242
KPI1a	# Outreach (<\$2.5 PPP)	1,244	929
KPI2	Net Income Impact in IDR (all farm HHs)	10,513,404,791	7,434,431,142
KPI2a	Net Income Impact in IDR (<\$2.5 PPP)	7,811,468,016	5,554,352,000
KPI3	Number of ISPs with increased turnover	14	8
KPI4	Additional increased turnover of ISPs in IDR	3,617,856,081	2,639,608,031
KPI5	# Number of Interventions	15	7
KPI6	Initiatives by Government to improve BEE	0	0
KPI7	# Intervention Partners (public & private sectors)	17	5
KPI8	Private Sector Partners co-investment in IDR	9,076,988,900	5,518,764,900
KPI9	Farmer's Investment in IDR	9,639,795,926	8,273,048,510

6. **All three value for money indicators improved.** This is driven by the increasing share of measured outreach, sustained use of irrigation during two semesters and resulting income increase from a greater number of farmers and partners' investment being in line or higher than their commitment.
7. **Diverse aspects of system change that are attributable to the program are emerging in the irrigation sector.** As the portfolio analysis highlights, TIRTA successfully moved away from scheme-level interventions to addressing the wider systems constraints that curtail private sector engagement and investment. While the program maintains its focus on proving the concept at scale, early signs of crowding-in, which are both program-instigated and autonomous, are becoming visible.

## MANAGEMENT RESPONSE

8. **The program will implement a revised strategy to build the capacity of HIPPA's – support Gol in improving its existing initiatives; communicate lessons learnt that can inform future investments in tertiary irrigation.** Policy trends and large-scale programming suggest that the promotion of HIPPA-led irrigation schemes remains the favoured approach towards increasing irrigation access across Indonesia. In this context, the underperformance of HIPPA's becomes a public-function constraint and Gol - the market actor - that the program should support to address this constraint.
9. **As the commercial case for irrigation technical assistance is being proven, and irrigation service providers show signs of behavioural change, the program can adopt a more facilitative approach.** Irrigation partners will be encouraged to engage with Mesindo directly to procure and pay for the audits/irrigation designs. Such offer will be tailored to the needs, capacity and profiles of the partners. This is expected to increase ownership and buy-in from irrigation businesses, encourage Mesindo's further investments and provide early evidence of sustainability.
10. **TIRTA's main focus will remain the attraction of private sector investments in tertiary irrigation and the adoption of technical innovation; the program will also take a light-touch approach to facilitate the response from market players in other supporting functions.** The emergence of strengthened and more prominent private sector players in tertiary irrigation is inciting market players such

as civil and electricity contractors, and legal firms to gain a better understanding of the irrigation market and the potential to serve it.

11. **Finally, with less than one year to program completion, TIRTA will develop its knowledge capture and dissemination plan.** Since its inception, TIRTA has gone through a steep learning curve which includes shifting its strategy and proving the viability and sustainability of private sector-led irrigation schemes, managing a project which embeds components of infrastructure development within a market systems model, partnering with local, individual entrepreneurs as opposed to regional or national business entities, and introducing new business models which were either absent or inefficient. TIRTA will address the demand for evidence and lessons learnt from its key stakeholders and wider audience. In S1Y18 the program will develop its knowledge capture and dissemination plan and initiate case studies to capture some of the key learning aspects, dissemination of which are planned in S2Y18.

# 1 Broader policy, institutional and environmental context

**Indonesia rose 20 places in the World Bank's Doing Business 2018 rankings to 72nd in 2018, up from 91st last year.** The 15 reform packages introduced by the Jokowi Government since 2015 to reduce and simplify regulations affecting several sectors, including tourism, logistics, pharmaceuticals, and energy, have begun to bear fruit. However, the agriculture sector remains heavily protected. With the upcoming elections in 2018, the government will be under increasing pressure to achieve its self-sufficiency targets in rice and several other crops. This is expected to increase non-tariff barriers to further stimulate domestic production.

**In 2017 the Ministry of Agriculture declared self-sufficiency had been achieved in rice.** Yet, supply shortages and sharp rises in the price of rice has led to the government authorising up to 500,000 MT of rice imports in late 2017.

**Fluctuations in prices of key crops including rice drove food price inflation up to 2.95% in January 2018.** This surge in prices has led the government to relax import restrictions to bring down the price of key food commodities. Government commitment to maintaining stable food prices remains a strong imperative, with the overall inflation target for 2018 set at a lower 2.5-4.5% (compared to 3-5% last year).

**According to the 2018 State Budget Draft (RAPBN), the government plans to reduce the allocated fertiliser subsidies budget from Rp. 31.2 trillion to Rp28.5 trillion.** This provides more space for the private sector, including TIRTA's partners, within the integrated productivity enhancement interventions.

**As the ADB/IFAD USD 600 million "Integrated Participatory Development and Management of Irrigation Program" progresses, TIRTA will seek to engage with the relevant parties to share its lessons learnt so far.** The evaluation of the previous "participatory irrigation sector project"<sup>1</sup> was rated less than likely to be sustainable due to "budget allocations to schemes that are under district accountability (i.e., smaller than 1,000 ha) remaining inadequate" and the fact that "it is not known if the full cost of O&M for the tertiary canal systems (under responsibility of WUAs) were adequate". Within this context, it is believed that TIRTA's learning, and evidence of the proven sustainability of private sector-led irrigation, could inform investments going forward.

**Following a new, more decentralised, budget structure, GoI has diverted funds from the Ministry of Finance to the Ministry of the Villages.** This attempts to improve village economies through BUMDes, i.e. village companies. In several districts, including Bojonegoro, this resulted in the merging of some HIPAs into BUMDes business units, which suggests a potential increase in BUMDes-led tertiary irrigation.

**The combination of a weak La Nina and a neutral Indian Ocean Dipole has produced conditions favourable for a neutral to wetter than average wet season.** This has been evidenced through much of Indonesia in recent months, with above average rainfall experienced in many areas of eastern Indonesia. There is a possibility that the La Nina might strengthen slightly, which would push up the probability of above average rainfall in the latter part of the wet season. In areas with well above average rainfall, flooding, waterlogging and pest problems may pose a risk for rainy season rice production. However, irrigation needs for rice production during dry season one are unlikely to be affected.

## 2 Portfolio management

### 2.1 Portfolio development progress

**TIRTA achieved its portfolio development targets with seven new interventions, in line with the SRP and DFAT's recommendation that the program focusses on timely intervention development and**

<sup>1</sup> <https://www.adb.org/sites/default/files/evaluation-document/159811/files/pper-ino-irrigation.pdf>

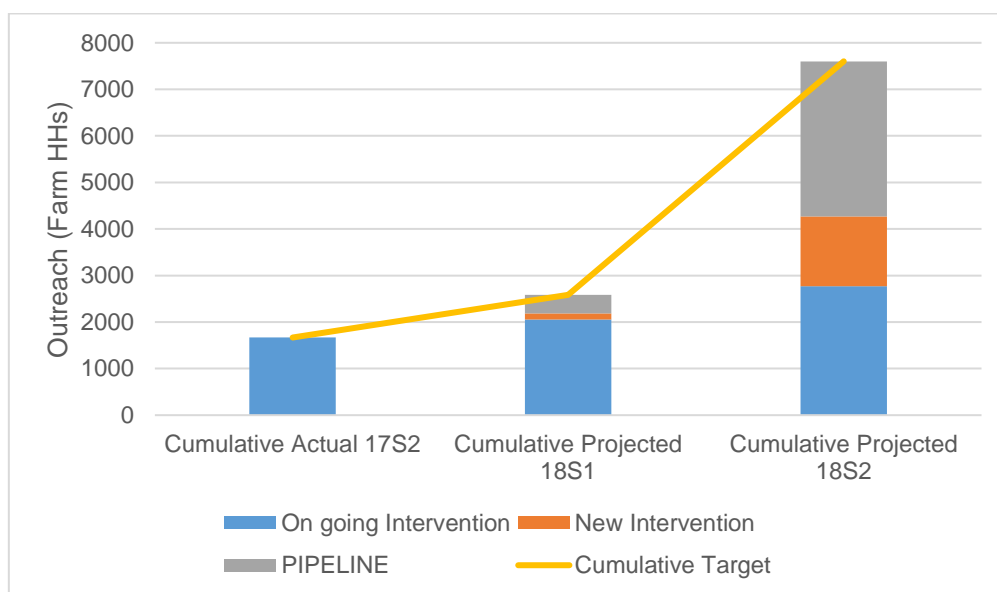
**delivery.** The team developed seven new Intervention Plans and signed seven new contracts, which rapidly moved into the implementation phase and generated access within the semester. The faster intervention turnaround is a result of numerous improvements, which include: a consolidated team with strengthened capacity, clearer leadership and direction, a strengthened portfolio management approach and tools, and the addition of two site supervisors with experience in irrigation system construction (hired on a retainer basis).

**Overall, seven new interventions developed this semester strive to reach 1,913 smallholder farm HHs by the end of 2018.** 1,042 farm HH are projected to use the irrigation service in the first semester of 2018, while the remainder will use the irrigation service in the second semester across seven new irrigation schemes. The integrated productivity enhancement intervention is projected to reach 1,752 farm HH across Bojonegoro and Tuban districts. 737 HH or 64% are expected to become users in the first semester of 2018, while the remaining 417 HH are projected to use the products in the second semester 2018.

**Three of the five interventions that remained in the pipeline have been closely monitored, and replacements have been identified.** The three existing pipeline partners (one Village Head, one BUMDes, and one HIPPA) rely on leveraged public funds (for which availability and timeliness are uncertain) to establish/expand the irrigation service, and appear to have limited capacity to manage irrigation sustainably in the long-run. The three proposed replacement interventions are partnerships with private sector providers which display a much greater certainty of coming to fruition within the program’s remaining impact measurement timeframe, and are a better strategic fit for the rest of the portfolio in terms of value addition and balancing resource needs. The inclusion of three additional private sector providers is also expected to encourage further private sector investments in tertiary irrigation and further prove TIRTA’s concept.

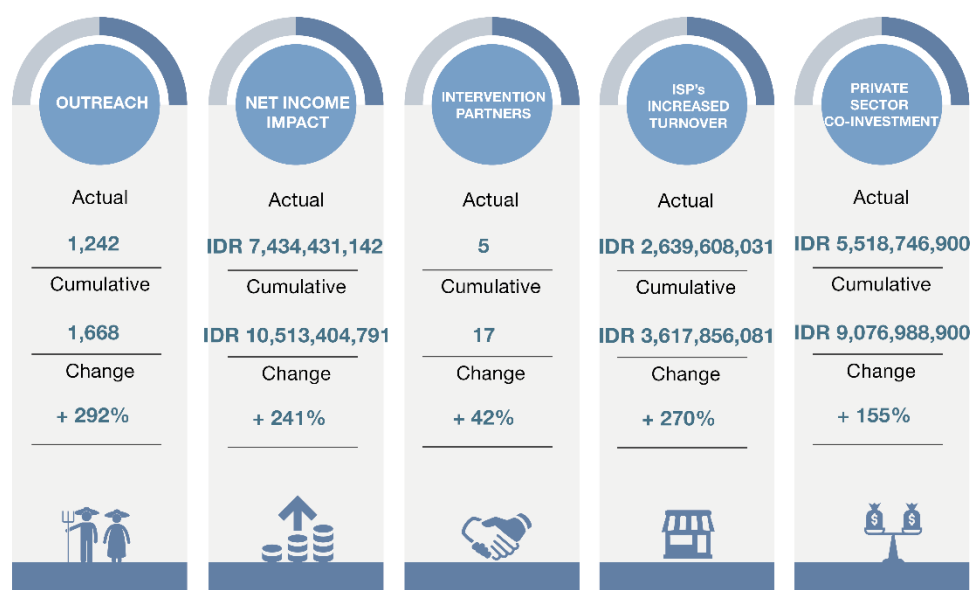
The two other pipeline interventions are progressing well against plans. The potential partners started the due diligence process in Gayam Phase 2 and Mayanggenen to cover technical and non-technical aspects, such as the use of public infrastructure, coordination with the village administration, and procurement of the land where the pump station will be located. Both sites are expected to be operational in dry season two.

**FIGURE 2: TIRTA INTERVENTION DEVELOPMENT TARGETS**





## 2.2 Key performance indicators and projections



### ACCESS, USE AND OUTREACH

**TIRTA facilitated access to irrigation and/or improved agricultural inputs and practices for 3,362 HH – 31% higher than the semester's targets.** This access is generated through ten irrigation systems, with the expected potential to cover 1,157 Ha or 2,621 HH, and seventeen demo-plots and expos which reached 741 HH. Cumulative access to innovation since the program start amounts to 6,257 HH.

**1,418 HH used new or improved irrigation, while 473 additional HH used improved inputs and GAP related to crop protection and fertiliser.** Access to Use ratio from all fourteen live interventions by the end of December 2017 was at ~49%, which reflects the lead time required for the irrigation systems to be operational. With seven additional sites expected to be operational in S1Y18, the cumulative access to use conversion ratios from irrigation alone are projected at 76% and 84%, in S1 and S2 respectively.

**TIRTA benefited 1,242 HH (929 HH<\$2.50PPP) during the first semester of 2017, 523 HH over the semester target of 719.** This amounts to a cumulative 1,668 HH (1,244 HH<\$2.50PP) since the beginning of the project. The variance from the semester projections mainly derives from Leran 3, where changes to the irrigation system led to both an initial expansion of 50 Ha and significant improvements in the quality of irrigation covering the 140 ha in the existing area – where farmers benefited from higher yields. A small proportion comes from the early harvest in Kemiri, which allowed for sufficient time to complete the impact assessment.

**Use to benefit conversion ratios of farm HH using new or improved irrigation service is ~95%.** This is higher than the 90% ratio the program is using in its projections, suggesting that total benefit at the program end might be higher than estimated. The use to benefit ratio of farm HH using the improved inputs and GAP is at 66% - 63% from using Syngenta and 73% from using Hextar.

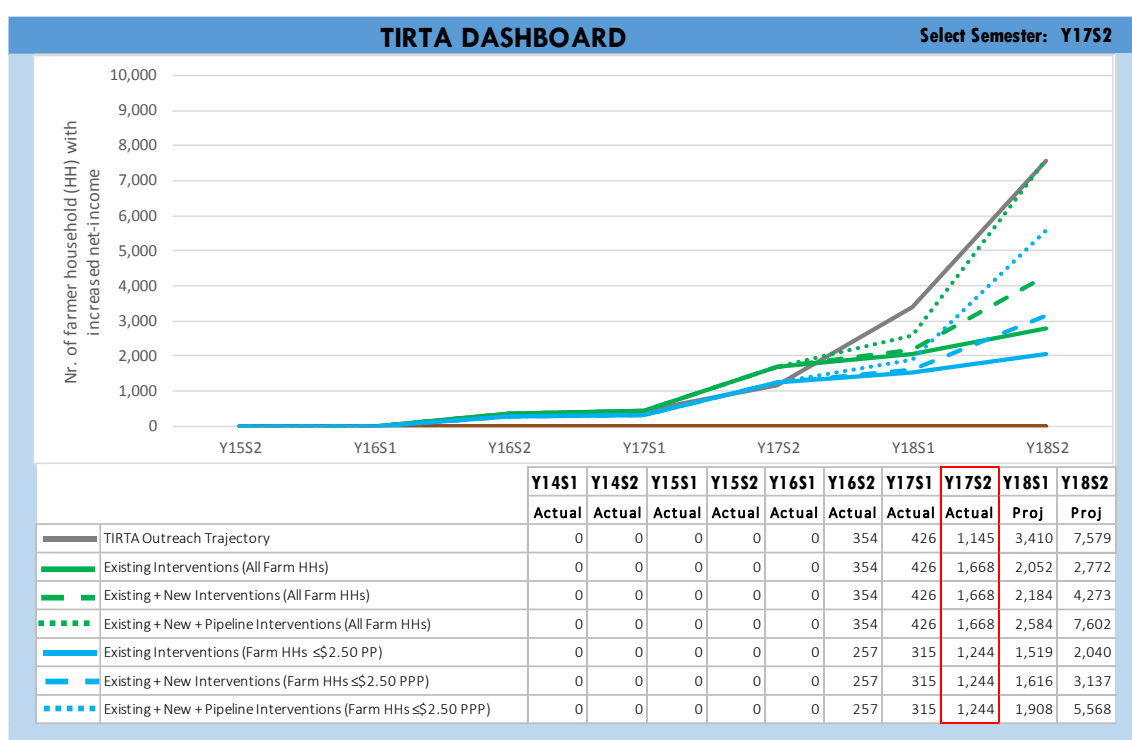
**The expected cumulative outreach for existing and new interventions is 4,273 HH (3,137 HH<\$2.50 PPP) by the end of 2018 and 3,329 HH (2,431 HH <\$2.50 PPP) from the pipeline.** The 2018 projections are an improvement on the previous PRIPs, which reflects the viability of the projection method developed in the current semester and improved strategies to achieve outreach both in existing and new interventions. Total projection until end of 2018 is 7,602 HH (5,568 HH <\$2.50 PPP).

+ 3362 HH  
ACCESSED IRRIGATION  
AND/OR IMPROVED  
INPUTS

+ 1891 HH  
USED IRRIGATION  
AND/OR IMPROVED  
INPUTS

+ 1242 HH  
BENEFITED FROM  
IRRIGATION AND/OR  
IMPROVED INPUTS

FIGURE 3: ACTUALS AND OUTREACH PROJECTIONS



In consultation with the SRP, the program was advised by DFAT to focus on implementing good quality interventions that deliver lessons learnt in the irrigation sector in order to prove the concept, and move away from an emphasis on achieving the original set targets (i.e. 10,000 HH). The program revised its projections to program end to ~7,500 HH using the revised projection tool reference in section 3.1.

## INCOME

**The increase in cumulative, average net attributable income change (NAIC) per farm HH is 191% or AUD 630, considerably higher compared to the 60% program target.** The high NAIC is evidence of the relevancy of irrigation as a key factor in contributing to increasing farmers' competitiveness and reduce poverty among smallholder farmers.

**The additional NAIC generated within the second semester of 2017 is AUD 743,443 (AUD 555,435 <\$2.50 PPP), reaching a cumulative figure of AUD 1,051,340 (AUD 781,147 <\$2.50 PPP).** 92% is generated from access to new or improved irrigation, whereas 8% was achieved through improved agricultural practices stimulated by the program.

**The poverty targeting is successful and surpassing the 60% target set for PRISMA-2** – the PPI assessments revealed that on average TIRTA engages with farmers that have a probability of 73% of living below the \$2.50 PPP line. In one intervention, Malo, the poverty probability index is 87% (<\$2.50PPP), which is considerably higher than other locations in Bojonegoro districts.

## OTHER KPIS

**Total cumulative additional ISP turnover is at AUD 361,786, which increased by ~270% from last semester.** The additional turnover of ISP within this semester is AUD 263,961 – 73% is generated from six irrigation service providers, and 27% from eight input retailers that experienced sales increases as a result of the promotional activities conducted by the input companies in collaboration with irrigation providers.

**The cumulative number of ISPs with increased turnover rose by 8 to a total of 14.** The additional ISPs include three irrigation service providers and five input retailers.

**Total partner investment amounts to AUD 907,699, increasing by 155% from last semester (AUD 355,822).** The total committed partner investment to date (contracts signed before the end of Semester 2) is

AUD 1,470,565 - 63% of which has already been disbursed by the partners, showing timeliness in implementation and likelihood of achieving future targets.

**Investment from farmers to date is at 963,980 (up from 52%), leading to a total co-investment from partner and farmers at AUD 1,871,678.** Amount of farmers' investment is significant, and is reflective of farmers' willingness and capacity to cultivate at least an additional cycle of paddy when given access to irrigation.

TABLE 2: PROGRAM LEVEL KPIS

KPI	Description	Actual cumulative Y17S2	Actual additional Y17S2
KPI1	# Outreach (all farm HHS)	1,668	1,242
KPI1a	# Outreach (<\$2.5 PPP)	1,244	929
KPI2	Net Income Impact in IDR (all farm HHS)	10,513,404,791	7,434,431,142
KPI2a	Net Income Impact in IDR (<\$2.5 PPP)	7,811,468,016	5,554,352,000
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KPI4	Additional increased turnover of ISPs in IDR	3,617,856,081	2,639,608,031
KPI5	# Number of Interventions	15	7
KPI6	Initiatives by Government to improve BEE	0	0
KPI7	# Intervention Partners (public & private sectors)	17	5
KPI8	Private Sector Partners co-investment in IDR	9,076,988,900	5,518,764,900
KPI9	Farmer's Investment in IDR	9,639,795,926	8,273,048,510

## VALUE FOR MONEY

**The first iteration of value for money calculations using total intervention costs (direct and indirect) were completed by the MIS team this semester and all value for money indicators shows positive trends.** This is driven by the increasing share of measured outreach, sustained use of irrigation during two semesters and resulting income increase from a greater number of farmers and partners' investment being in line or higher than their commitment.

**Ex-post investment per HH against total intervention cost is currently AUD 1,159, down from AUD 2,764 at the end of last semester.** If we assume that TIRTA will spend approximately 77% of the overall budget on interventions (AUD 6.5m), this should come down to around AUD 860 towards the end of the phase if we reach 7,602 HH. As irrigation providers continue to expand their businesses and Mesindo engages with additional providers, the program expects to generate indirect outreach and lower the investment per HH further. Compared to direct intervention cost only, the investment per HH is now at AUD 251.

**Social return on investment (SROI) against total intervention cost is doubled from last semester, from AUD 0.26 to AUD 0.54.** As irrigation schemes have an expected lifecycle of at least ten years before major maintenance is required, the SROI attributable to the program goes well beyond the two-year DCED standard timeframe. TIRTA will develop and propose a theoretical methodology to measure SROI that best accommodates the nature of the program.

**Investment leverage as per total intervention cost is 46.95%, increase from 30.21% from last semester.** The program direct spending leverage however is at 217%. This shows the ability of the program to attract investment and tailor its strategy to the need, capacity and profile of the partners. This is calculated only using partners' investment. Given the high farm level investment, TIRTA proposes to calculate leverage using total co-investment from S1Y18.

## 2.3 Portfolio analysis

**TIRTA currently has fifteen interventions, an increase of seven from the previous semester - ten are partnerships with the private sector, two with G-HIPPA, one with a BUMDes and one with a HIPPA.**

Overall, the portfolio maintains a private sector focus, but presents sufficient diversity so as to enable the project to contribute to broader tertiary irrigation sector learning. The geographical coverage of the program extended to Tuban District.

**TIRTA's mentor led a program review assisted by the revised QMT.** The review acknowledged the significant progress of the program, provided key insights to strengthen the strategy, and recommended sustaining the achievements of the irrigation consulting intervention by “pushing” it in the next semester. A detailed overview of the QMT results is included in Annex 4.

**This semester's activities prioritised interventions with the highest potential to stimulate systemic change, while ensuring the timely achievement of the program's targets.** The strategy was underpinned by three principles that are aligned with the program's exit strategy:

- Leverage a significant injection of capital into the irrigation sector by the private sector;
- Promote innovations that allow sustained revenues, quicker return on investment, and lower risks, to foster high commercial interests and capacity in maintaining the schemes in the long-term;
- Facilitate the establishment of irrigation technical assistance services in the market – a missing yet essential function that will aid in sustained investments in high performing irrigation businesses.

In translating these principles into implementation, the program prioritised two interventions areas: irrigation technical assistance and integrated productivity enhancement. While this tactic proved successful and showed the potential to instigate changes beyond the private sector, the program has developed a revised strategy to contribute to addressing HIPPA-specific constraints – challenges and lessons learnt from, and management response to, the ‘irrigation management capacity building’ intervention area are discussed in section 3.4 and 3.5. A summary of key progress achieved in Irrigation Technical Assistance and Integrated Productivity Enhancement follows.

### Irrigation Technical Assistance

**Most of the real and perceived risks of investing in tertiary irrigation are associated with low-returns and high incidence of financial failure** – a consequence of technical inefficiencies in the way irrigation systems are set up and managed. Existing irrigation providers and entrepreneurs that venture into the irrigation market rely on local knowledge and a trial and error approach to designing irrigation systems and selecting equipment and infrastructure; this knowledge is systematically inadequate.

**Correcting this engrained practice called for a gradual strategy aimed at proving the commercial case for investing in improved irrigation systems while introducing a novel service in the market.** TIRTA is supporting Multi Mesindo Jaya, a local pump retailer business, to fill this gap by providing irrigation advisory services. When developing and conveying the business case for investing in tertiary irrigation to the private sector, TIRTA has also encouraged its irrigation provider partners to engage with Mesindo so as to improve their existing irrigation systems and develop better irrigation expansion designs. The key outcome of this semester was to build a critical mass of irrigation providers with increased awareness and improved practices, as well as willingness to use and promote the service in the future.

**Irrigation consulting indicates a high potential to both improve the reliability and efficiency of irrigation schemes and catalyse investments in the sector.** By the end of 2017, within one semester, Mesindo has issued seventeen audits/design reports – twelve additional, three of which were to independently sourced potential clients. Seven irrigation providers have begun progressively adopting Mesindo's technical recommendations, one additional partner has paid the first instalment towards Mesindo's fee, and two additional partners plan to develop/improve the irrigation systems using Mesindo's designs and assessments in S1Y18. As irrigation providers are starting to experience the benefits from improved irrigation systems, i.e. reduced operation costs, higher coverage and ultimately returns, the demand for advisory services is expected to increase. Interventions in Besah and Tejo are serving as demonstration sites to promote the benefits from accessing irrigation consulting – two irrigation providers that have visited these schemes have expressed their interest in hiring Mesindo to develop the design of their systems and support them with technical assistance.

**Mesindo's technical and organisational capacity is being improved through tailored training and ongoing support.** The Certified Irrigation System Advisors/Assessors/Auditors (CISAs) delivered by PTCHA<sup>2</sup> was instrumental in enhancing Mesindo's understanding of its agricultural clients' needs and in growing the skills of its staff in providing suitable pumping solutions to suit the market. The training also highlighted areas which need further improvements to best respond to the infancy of the market and diversity of the clientele. Some of these have been addressed after the training; further assistance will be provided in the next semester to hone Mesindo's offer to develop alternative and complementary solutions to respond to the capacity and profile of different clients, and include cost-benefit analyses.

**The market reaction and capacity building supported by TIRTA gave sufficient confidence to Mesindo to invest further in the irrigation service market of their business.** They have opened a branch in Bojonegoro, hired one additional staff member, and made plans to hire one freelance civil engineer on a retainer basis from S1Y18. The strategy towards their long-term vision is twofold: on one side, they will focus on the sale of agricultural pump units based on a robust professional design, for which a fee is applicable; on the other, they will promote the irrigation design consultancy as a fee for service option, which can potentially be discounted off the price of the pump(s) at the sale should this eventuate.

**Mesindo's independent facilitation and the response to its offer by the market are proof that the service can deliver impact beyond TIRTA's partners.** Mesindo's staff started to propose their service to local irrigation providers – to date, out of the seven visited, three irrigation providers are interested in engaging with them further. TIRTA will track indirect impact from Mesindo and provide soft support as needed.

**A remote sensing study has been commissioned to research the potential for irrigation in Bojonegoro, Tuban and part of Blora districts.** The analysis provides valuable data that can be exploited by several agents in the sector to support irrigation planning and development. Mesindo staff attended the meeting with the GIS consultant in which key findings were discussed. The findings show availability of large areas of rice fields in 11 sub-districts in Tuban, 11 in Bojonegoro and 2 villages in Cepu (Blora district); these rice fields are solely-rainfed, topographically less than 0.5% of slope and within 2 km of Bengawan Solo river, and as such present significant opportunities for surface water irrigated rice production. The findings will be disseminated during selected workshops planned for semester one and two in 2018 so as to promote irrigation opportunities, consulting service and success stories from TIRTA's partners to local entrepreneurs, existing irrigation providers, relevant supporting services such as the Contractor Association, the Agriculture and Public Works Department of Bojonegoro. Mesindo will also use the data to both reach out to potential clients based on existing irrigation coverage and unirrigated land and to improve its auditing services.

## Integrated Productivity Enhancement

**An additional inhibitor preventing private sector investments in - and sustained returns from - irrigation is low crop productivity.** As irrigation is paid for in-kind as a fixed share of the harvest, irrigation businesses' profitability is highly dependent on paddy yields and exposed to the risk of crop failure – one of the most common causes of bankruptcy amongst irrigation businesses. Hence, irrigation providers have significant incentives to limit the risk of crop failure and guarantee their irrigation users produce high paddy yields. On the other hand, irrigation providers represent a key market segment for input suppliers to target, in virtue of the nature and size of the relationships irrigation providers have with farmers. Yet, these business models were untapped.

**The promotion of innovative business models combining irrigation provision and improved agricultural inputs and GAP is gaining traction among TIRTA's partners and beyond.** Through TIRTA's facilitation, these previously untapped relationships are receiving increasing attention; irrigation providers are becoming more and more sensitive to the potential of expanding their service to encourage improved

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<sup>2</sup> PTCHA is an Indonesian (Denpasar) based Consultancy Company working closely with Australian Irrigation Experts with a variety of expertise and experience in irrigation design and engineering. PTCHA has previously conducted irrigation schemes assessments for TIRTA.

agricultural practices among their irrigation users, while agricultural inputs providers are exploring innovative business opportunities targeted at irrigation providers.

**Hextar's successful results in the promotion of commercial fertiliser achieved in S1Y17 attracted the interest of Dharma Guna Wibawa (DGW) to partner with TIRTA.** Hextar took the lead during a total of eight farmers meetings, ten demonstration plots, and one mini-expo, attended by 448 farmers (339 males and 109 females) ~31% of which became users within the first season. As part of the planned activities with Hextar, DGW piggybacked on three promotional events organised by Hextar (and facilitated by TIRTA) to pilot the combined promotion of commercial fertiliser and pesticides. This led to a partnership between Hextar and DGW, which TIRTA will support in the next semester through a tripartite agreement. The partnership covers: at least 50 events in Bojonegoro within the first semester of 2018 – demonstration plots, farmers trainings, farmers field schools and Expos – each including a direct selling session involving the local retailers; Training of the Trainers targeting 100 level 2 retailers in Bojonegoro; 3 Expos/Mini-Expos, and; the development of creative and innovative marketing materials aimed at maximising information diffusion and adoption.

**Conscious of the potential of partnering with irrigation businesses, Hextar and DGW conducted a business linkage workshop facilitated by TIRTA.** The workshop was attended by 22 irrigation providers and aimed to introduce a spectrum of mutually beneficial cooperation opportunities and to promoting key products such as KNO<sub>3</sub> Crystal and Wetcitt. The ultimate vision is for irrigation businesses to become stock points, or level 1 retailers, for Hextar and DGW, as well as receiving privileged support from HFI-DGW's field staff and farmers' training targeted at their irrigation users. This business model constitutes an additional revenue stream, and it would, therefore, benefit irrigation providers beyond securing higher returns from irrigation.

**After the event, seven irrigation providers independently engaged with Hextar and DGW to become a stock point and/or to facilitate farmers training, demonstration plots and expos in the areas they are serving.** Among them are Mrs. Hanah, TIRTA's partner in Gayam, who decided to become a level one retailer and Untung Basuki, one of the largest irrigation providers in Bojonegoro and head of the rice millers' association. 80% of the farmers who attended the first event facilitated by Mrs. Hanah became HDI-DGW users (151 out of 191), while Untung Basuki procured high volumes of spray fertiliser to test its efficacy across 60 hectares. Both are independent investments. TIRTA also facilitated the creation of a Whatsapp group with 20 members among irrigation providers, Hextar and DGW staff. The Whatsapp group is serving as a platform where irrigation providers can receive responsive advice in the event of pest outbreaks or other risks that could jeopardise paddy yields, and the inputs companies can promote their products and results from demonstration plots. This strategy is expected to lead to high access and to have high conversion ratios, thus sustaining the turnover of TIRTA's partners, and both direct and indirect impact.

## Systemic Change

**Diverse aspects of systemic change that are attributable to the program are emerging in the irrigation sector.** As the portfolio analysis highlights, TIRTA successfully moved away from scheme-level interventions to addressing the wider systems constraints that curtail private sector engagement and investments. While the program maintains its focus on proving the concept at scale, early signs of crowding-in, which are both program-instigated and autonomous, are becoming visible.

**All private sector partners have respected their investment commitment and developed new irrigation schemes adopting improved technical standards.** The quality of the irrigation is good across all private sector schemes and return on investment is in line with projections – irrigation businesses are upholding their investments in subsequent seasons or preparing for it to cover all associated costs with no program support.

**All partners have made qualitative and quantitative investments beyond the scope of the partnership with the program.** Although the scale and scope of additional investment vary, it is evident that the private sector is becoming more and more willing to invest and manage tertiary irrigation at increasing extent and are ready to sustain accelerated and enlarged business expansions.

**Change is becoming visible beyond the program's facilitation - two irrigation providers, with a similar profile to TIRTA's partners, have copied technological innovations adopted in TIRTA's supported schemes that they have visited.** Similarly, Mesindo's progress in promoting their offer suggests that several irrigation providers are ready to seek irrigation consulting services. Two other irrigation providers are engaging with Hextar and DGW. These changes have been made and upheld with no program support.

**The emergence of strengthened and more prominent private sector presence in tertiary irrigation is inciting market players in supporting functions, beyond those supported by the program, to react to the new market reality.** One PLN subcontractor exposed to the program is facilitating irrigation providers to install electricity connections at the industrial rate (30% cheaper than the business rate) in virtue of a better understanding of irrigation businesses. Mesindo met with the Head of Bojonegoro Contractors' association to scope the potential for partnerships with civil contractors in response to the demand of irrigation providers to receive support in the development of new irrigation systems. Finally, a local law firm, which assisted one of TIRTA's partners in the development of an intervillage agreement, is displaying an improved understanding of the irrigation market potential, and will provide assistance to irrigation providers in other locations (the initial consultancy being the result of interaction between the partners and the law firm, with all costs incurred by the partner).

## 2.4 Challenges and lessons learned

**The learning and results of the direct approach of building the capacity of HIPPA's piloted in the last semester call for an improved strategy.** Policy trends, and large-scale programming such as the ADB "Integrated Participatory Development and Management of Irrigation Program", suggest that the promotion of HIPPA-led irrigation schemes remains the favoured approach towards increasing irrigation access across Indonesia. In this context, the underperformance of HIPPA's becomes a public-function constraint, which makes GoI the market actor with the highest incentives to overcome the existing inefficiencies. It is clear that the prevailing dynamics prevent the emergence of a viable private-sector led capacity building function targeted at HIPPA's, as initially envisioned by the program, and that TIRTA's efforts in this space should target public actors, in the form of localised regulation and public services facilities to national policies.

**Engrained practices and market actors' attitude towards change and the adoption of technical innovations imply a necessarily gradual shift.** Irrigation providers initially tend to perceive Mesindo's recommendations as a radical shift from current operations, and too expensive in the short-term. The team observed that a more progressive approach, one that allows for a stage-based adoption of innovations and even sub-optimal yet improved practices, is more conducive to facilitating change given the infancy of the market. Nevertheless, when the benefits from initial adoption are perceived, irrigation providers gain the confidence in making additional changes to their systems. It is critical that the technical recommendations are supported by a thorough cost-benefit analysis, which, when coupled with evidence from the early adopters that have in some cases been used as demonstration sites, can address the short-sightedness of irrigation business and thus support adoption.

**The strategy adopted so far towards the promotion of irrigation consulting was appropriate in the pilot stage to prove the concept, but needs revising to achieve scale and prove sustainable.** The novelty of irrigation consulting required TIRTA's support from early relationship brokering through to the design and establishment of the irrigation systems. As the commercial case for irrigation technical assistance is being proven, and irrigation service providers show signs of behavioural change, TIRTA can now adopt a more facilitative approach. Mesindo should lead the negotiation and irrigation audit/expansion planning process and interact closely with irrigation providers. This is expected to increase ownership and buy-in from irrigation businesses, and aid Mesindo in developing tailored solutions, as opposed to a best-case scenario, high cost/high returns recommendation which do not necessarily respond to the capacity and vision of irrigation providers.

**TIRTA has observed both the latent need and expressed demand for other relevant supporting services which were identified by the program but did not received immediate attention.** Legal advisory

services are sought to address the need for the formation of intervillage agreements, formalisation of contract enforcement by the village administration or for licensing procedures for the development of infrastructure in public properties, all of which often force irrigation businesses to take high risks and/or even prevent them from operating in specific areas. Ancillary services, such as electricity and construction of fixed infrastructure, such as concrete canals, are also increasingly in demand as the private sector becomes more involved and invested in the irrigation market.

## 2.5 Management response

**TIRTA's revised strategy to build the capacity of HIPPA is twofold. Firstly, it aims to support Gol in improving its existing effort and initiatives.** With the shift in funding towards the Ministry of Villages (MoV), which intends to build village economies through enhancing the capacity of BUMDes, there is an opportunity to tap into the existing MoV Training Centre facilities program so as to include an irrigation business curriculum for those BUMDes that are expected to manage tertiary irrigation schemes. Meetings held with MoV and DFAT kick-started the preparation towards the development of a comprehensive training module in irrigation business and management, which will be delivered to village facilitators following a Training of Trainers model. The training modules will build on the training curriculum developed by IPB and lessons learnt through its implementation in the "HIPPA Management Capacity Building Pilot" interventions in Piyak and Malo, and other outputs from similar initiatives. This intervention will be implemented alongside PRISMA as the development of a training curriculum for the MoV Training centre is part of their Gol interventions plan.

**Similarly, TIRTA will continue to support the Department of Agriculture in Bojonegoro in the evaluation of their HIPPA program.** Together with Mesindo's staff, TIRTA will support the next evaluation in March, to introduce best practices in irrigation systems development and share lessons learnt from G-HIPPA Piyak and Malo schemes supported by Dinas Pertanian.

**Secondly, TIRTA aims to communicate its lessons learnt that can inform future investments in tertiary irrigation development.** Responding to the consultation with its key stakeholders, TIRTA will support the government agencies by developing a policy paper with a focus on tertiary irrigation aspects, which are critical to the government's express concerns. The study will focus on (i) exploring the roles and functions of government agencies in addressing the needs of HIPPA on irrigation management, and the gap in the actual delivery of such services, and (ii) recommending a set of actions for improved delivery of irrigation management services through enhanced collaboration among the agencies. During the study, TIRTA will closely involve those local government agencies that are exposed to the on-ground realities, and then later share the findings with national level representatives of the concerned departments. While TIRTA may not be in a position to support the agencies in implementing the recommendations within its remaining program phase, the findings will set a sound base for PRISMA-2 to accelerate advocacy work for improved public service delivery in tertiary irrigation and associated policy change. During this course, TIRTA will also develop its learning outputs covering the main themes of interest, including: challenges and lessons learnt regarding the role of HIPPA; a comparative assessment of HIPPA and private sector-led tertiary irrigation; a how-to guide on irrigation provision – from the establishment of schemes through to day to day operations; evidence of systemic change in the sector, and an updated proof of concept.

**TIRTA will make a strategic shift in the manner in which the program promotes Mesindo's offer among its partners to prove (and facilitate) the sustainability of irrigation consulting.** Partners will be encouraged to engage with Mesindo directly to procure and pay for the audits/irrigation designs. Such offer will be tailored to the needs, capacity and profiles of the partners – if needed, the program will contribute to the costs associated with hiring Mesindo to incentivise newer, less sensitive partners. Similarly, more experienced businesses ready to implement bigger, more complex, schemes will be incentivised to adopt optimal solutions, which often includes purchasing high-quality pumps, through a higher cost-contribution from the program to de-risk the significant investment made by the partners. TIRTA will also support Mesindo to develop its capacity to provide alternative, complementary solutions to cater to the will and capacity of the irrigation providers; the solutions will also include simple cost-benefit analysis to enable the providers to compare and choose among the options.



**While TIRTA's main focus remains attracting private sector investments in tertiary irrigation and the adoption of improved practices, the program will take up light touch facilitation activities to introduce and promote new services currently in demand in the irrigation market.** The legal firm introduced to one of the partners (who fully paid for the consultancy) will also be introduced to those irrigation providers that have withdrawn from opportunities to expand in areas which required intervillage agreements, use of public facilities such as canals, or similar. TIRTA also plans to promote those civil and PLN contractors that prove more responsive to the increased demand for such service, and identify additional ones that can provide the right advice and help in getting quick and adequate construction and electric connections for the irrigation providers. TIRTA will capture and promote the benefits of using the legal and other services by organising a sensitisation workshop for the irrigation providers in Bojonegoro and Tuban.

**Finally, with less than one year to the program's completion, TIRTA will develop its knowledge capture and dissemination plan.** Since its inception, TIRTA has gone through a steep learning curve, which included shifting its strategy and proving the viability and sustainability of private sector-led irrigation schemes, managing a project which embeds components of infrastructure development within a market systems model, partnering with local, individual entrepreneurs as opposed to regional or national business entities, and introducing new business models which were either absent or inefficient. TIRTA plans to capture its major learning through different communication mediums (case studies, technical reports, and videos) and disseminate this knowledge to targeted audiences. This semester TIRTA will develop its knowledge capture and dissemination plan and initiate case studies to capture some of the key learning aspects, with dissemination of these studies to be implemented in the last semester.

## 3 Cross cutting issues

### 3.1 Results measurement

**TIRTA's result measurement system was reviewed in August through a DCED Pre-Audit, which confirmed that TIRTA is compliant with the DCED control points.** The SRP advised that they were sufficiently confident with the results of the pre-audit to allow the program to proceed without a full audit – predominantly because of the potential this posed of disrupting implementation at a critical time. A follow-up plan in response to the key recommendations to improve the documentation process, especially in relation to qualitative data, and review meeting processes, has been developed and actioned.

**The capacity of the implementation team in monitoring and documenting the intervention has improved.** Implementation staff are better aware of their roles and responsibilities in capturing and documenting monitoring data, and are equipped with the necessary skillset – this was achieved through increased coaching from the MRM staff and the MRM training conducted during the semester.

**TIRTA has conducted six impact assessment (IA) surveys this semester and plans to conduct five additional IAs during S1 and 16 in S2 to capture the impact from the dry seasons.** The planning is being supervised by AIP-R Head of RML to ensure adequate resource allocation, timeliness, and quality.

**A quantitative measurement of TIRTA's impact on Women's Economic Empowerment was piloted in 4 IAs this semester.** The surveys piloted a refined sampling methodology to allow an improved balance between female and male respondents, and the measurement of TIRTA's impact on all domains of Women's Economic Empowerment. This anticipates the greater emphasis on WEE within impact measurement of PRISMA-2.

**A concept note was prepared, together with other AIP-Rural MRM staff, to measure unintended impact beyond NAIC, inclusive of the feasibility, robustness and the cost-effectiveness of the proposed methodology were assessed.** Of particular relevance for TIRTA is the significant increase in land value as a result of irrigation, and the increasing demand for paid labour from additional cropping intensity – this will be piloted in S1 Impact Assessments.

**TIRTA revised its overall impact projections to the program-end using an improved projection tool.** The tool incorporates risk ratings which are used to discount projections, tailored land size averages as opposed to the flat average set out in the design document, and a delayed conversion from access to use to allow for progressive expansion of irrigation schemes, should the systems not operate at full capacity from the first season. All parameters are regularly updated based on monitoring and impact data.

## 3.2 Gender and social inclusion

**In this past semester, AIP-Rural worked with an international Women’s Economic Empowerment (WEE) Specialist to significantly upgrade the team’s implementation-related capacity, tools, and systems.** Notably, this included: the development and roll-out of a portfolio stock-take method to assess the extent of WEE strategic thinking at the intervention level; upgrading WEE at key stages in design (e.g. so as to integrate gendered information more strategically into the development of the business case, along with facilitating the teams in identifying other commercially-focused WEE opportunities); making significant modifications to the Impact Assessment Methodology; more strategic inclusion of the WEE integrators; capacity building of implementation staff in relation to the new WEE inclusions in the deal-making guidelines.

**A key achievement is the piloting of a quantitative WEE impact measurement which confirmed the high potential of irrigation to lead to positive WEE outcomes.** The WEE Impact Assessment was integrated in four IAs<sup>3</sup> this semester. Across all four interventions, TIRTA’s facilitation has led to higher levels of empowerment for local female farmers in all domains. Access to irrigation and skills development are the key drivers of positive change, together with the derived economic gains. Improvements in these dimensions of WEE positively affected agency dimensions and decision making specifically; improved knowledge and higher contribution towards household income allowing women to have more authority and space to inform decisions regarding productive and non-productive aspects within their households. The increased demand for paid labour<sup>4</sup> is of particular relevance to WEE, as women tend to have greater control over the income generated from paid labour than the income generated through household’s agricultural production.

**TABLE 3: PROGRAM’S IMPACT ON WEE MEASURED TO DATE**

WEE Domains	Program’s Impact:
<b>Access to Resources</b>	872 women farmers accessed high quality <b>irrigation</b> services
<b>Access to Opportunities</b>	191 women farmers accessed GAP <b>skills development</b> training 82% reported increased <b>job opportunities</b> intended as days of paid labour (49% and 30% for 1-2 weeks additional and more than two weeks additional paid labour respectively)
<b>Economic Advancement</b>	Average NAIC HH to date AUD 495 90% stated to have perceived at least some <b>benefit from increased income</b> and over 20% stated significant improvements <sup>5</sup>
<b>Decision Making</b>	33% experienced improved <b>decision-making authority</b>
<b>Manageable workload</b>	89% are satisfied with <b>workload</b> level
<b>Networking and Leadership</b>	17% experienced improved <b>networking and or leadership</b> <sup>6</sup>

**The WEE stock-take revealed that the majority of TIRTA’s interventions make *some strategic use of gendered information, which is then integrated into intervention development and implementation.*** This is particularly relevant for the integrated productivity enhancement interventions. Beyond involvement in the sector and key activities in rice production, TIRTA’s MRM system has integrated specific indicators to assess women’s roles in decision making in relation to agricultural production. This will aid in building the

<sup>3</sup> Pilanggede 2<sup>nd</sup> Phase, Malo, Kemiri and Leran 3

<sup>4</sup> This finding is relevant beyond WEE, as it suggests that the smallholder HHs incomes are increasing beyond the reported NAIC – as that indicators is calculated on production alone.

<sup>5</sup> The benefit reported correlates with the increase in income – this means that benefit is likely to increase with higher and sustained incomes in the following seasons; and also corroborates the robustness of the methodology.

<sup>6</sup> This figure should be interpreted cautiously, as increase in networking and leadership might have occurred due to exogenous aspects. Measurement over time will improve the program’s understanding of improvements in this domain.

business case for inclusive business practices which go beyond targeting the visible “customers” and users of improved agricultural inputs, but take into consideration the “hidden” role of women in making agricultural decisions and managing the household finances, and how these play into the types of products and services these households choose to engage with.

**As of last semester, TIRTA has an overall 46% female farmers participation rate (1,611 female HH members vs 1,892 male).** As female and male farmers tend to be equally involved in irrigated rice farming, access to irrigation leads to significant benefits for both female and male farmers. Average female farmers participation rates in productivity enhancement trainings is at 19%, mirroring female farmers involvement in crop protection and fertiliser application. Although the access strategy targets male participation in trainings in virtue of their dominant role in these activities, partners are encouraged and supported to develop inclusive activities that enable and encourage female farmers participation.

**In the next semester, the capacity building work with the external consultant will continue, including a further update of the stock-take, alongside further strengthening of integration of WEE within key program assessment tools** (namely, the Intervention Concept Note process and the Quality Management Tool) and additional improvements to the WEE Impact Assessment. WEE study topics will also be included into the overarching preparatory studies assignment; one tentative topic inclusion is to explore the status of current explicit or implicit marketing strategies to women clients in select agricultural sectors (either directly within partners or wider support service markets).

**In partnership with the University of Canberra, TIRTA is also developing a study on the use of wearable technology to observe gender differences in workload in farming households in Indonesia.** The study will use smartphones and wearables sensors to gather accurate data on women and men’s roles, division of labour, and labour productivity in the household and agricultural enterprises. The outcomes of the research include: i) developing a robust process which provides a more objective snapshot of the reality of time use and occupational workloads in farming households; ii) enabling the program to see more clearly how far/close perception-based questionnaires are to reality in terms of the data they provide; iii) helping the program to develop more reality-based engagement of market interaction points in the future (i.e. this will lead directly to improved engagement design); iv) potentially helping the program to improve function activities (i.e. identifying ‘hot geographical activity points’ e.g. for information provision) and to monitor potential unintended consequences related to workload.

**Following the recommendation from the disability inclusion training, TIRTA has included disability assessment across six IAs.** Using a revised methodology based on international best-practice, the assessment determined that ~8% of TIRTA’s beneficiary’s households have members with disability.

### 3.3 Environment

**During the second semester of 2017, TIRTA conducted environmental screenings for 11 interventions** to identify the environmental impact risk level of TIRTA’s interventions. To date, a total of 16 environmental assessments have been completed by the program.

**All 16 environmental assessments have been identified as posing a low risk to the environment** - mainly because the irrigation schemes facilitated by TIRTA are small-scale and often cover improvements and rehabilitation as opposed to new construction.

**An international environmental expert will develop an Environmental Protection Strategy (EPS) in S1Y18 to further strengthen TIRTA’s environmental risk 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. The EPS will ensure that TIRTA’s safeguards are adequate and in line with DFAT’s Environmental Protection Policy and provide advice and guidance to bring

them in to line as follows: (i) Ensure that TIRTA's EPS is translated into clear and easy to use guidelines for TIRTA's staff on how to assess specific relevant environmental issues across its portfolio of interventions, so they can run this analysis themselves in future, and (ii) Assist the team in running these new process steps across a select number of current/new interventions, to train them in practice on how to use the steps moving forward.

**The local consultant will assist TIRTA's staff to implement the EPS, review existing EIA and complete the assessment of new pipeline interventions.** The local environmental specialist will shadow the international environmental specialist throughout the visit to upgrade its capacity and ability to assist TIRTA further.

## 3.4 Communications

**This semester the communications unit focused its efforts on producing a wider range of communications products with a far more strategic emphasis;** the team increasingly designs products to carry far clearer pre-established core program messages and brand positioning, actively responding to the needs, opinions and perceptions the program's stakeholders (as systematically explored in the recent Stakeholder Engagement Perception Survey, outlined below). The team has also worked to ensure these products (and embedded messages) are designed in a manner that allows for rapid and effective absorption by key audiences (often with shorter, tighter delivery formats that are far more easily and broadly disseminated). In turn, this also aims to maximise product efficiency, utility, and lifespan, thus making far better use of communication production resources (including HR time), and in turn representing better value for money.

These products include: **Farmers of Indonesia (Fol)** – showcasing the program's success in an easily relatable 'human interest' beneficiary perspective; **Partner Perspectives**, illustrating partners' experiences in working with the program, how they have benefitted from the joint collaboration, and why the activity is set to sustain; **Our Approach in Action**, capturing AIP-R staff insights and perspectives of implementing the inherent market systems development approach; **Women's Economic Empowerment (WEE)**, focusing on the commercial case for inclusive business practices, and; **Commodity Snapshots**, which summarise key aspects of the commodities the program is targeting. The final products will be disseminated through, among other formats, printed and digital info-cards and one-minute info videos.

**One Farmers of Indonesia story has been published this semester, and two Partner Perspective cards have been developed and are expected to be distributed during the first semester of 2018,** with many more to follow (the timeline of which will be delivered to DFAT within Semester 1 2018). **The AIP-Rural Learning Series** (case study series), led with the support of Palladium staff, has also been designed and case study topics selected, in the current semester, and all products will be rolled out under a clear over-arching AIP-Rural communications messaging 'banner'.

**Aside from major product redesign, as noted above, the major achievement this Semester has been the completion of the Stakeholder Engagement Perception Survey (SES)** with the support of an external consultant. Positively, the survey informed the program and DFAT that AIP-Rural is very highly regarded by its stakeholders, who see the program as offering a high level of value-addition to their work. The survey also explored topics of perception, image and relationships at depth, and this will be reported back to the staff next semester for reflection and (where needed) adjustment of approach, as well as being heavily taken into account in the upcoming revised Communications Strategy update. The final report draft will be published early in Semester 1 2018.

**The AIP-Rural website has been updated and made more user-friendly.** The current sub-optimal effectiveness of the website as a key communications tool was raised in the SES, and the team will reflect on this in the upcoming Communications Strategy update.

## 3.5 Risk management

**AIP-Rural has updated its combined risk matrix following the CMT strategy meeting.** The risk of market-distorting policies and practices affecting the success of interventions continues to be high, and is likely to intensify in the lead up to the Indonesian national elections this year as the government tries to meet self-sufficiency targets in key crops. PRISMA and TIRTA are intensifying collaboration with local governments to identify potential win-win solutions.

**While environmental assessments for all interventions this semester have been identified as low risk to the environment, TIRTA will continue to closely assess and monitor environmental risks.** TIRTA will develop an Environmental Protection Strategy which will take relevant DFAT and GoI environmental considerations into account. The new EPS will contain a decision tool that takes two aspects of environmental risks into account: i) those environmental risk directly, causally connected to the activity between TIRTA and the partners and third parties ii) those environmental risks indirectly, causally connected to the activities between TIRTA and the partners and third parties that may nevertheless have the potential to result in foreseeable harm/environmental risk that has an implication for TIRTA. TIRTA will also develop the capacity of its staff to follow the EPS and ensure TIRTA's safeguards are adequate and consistent with prevailing DFAT guidelines.

**Communications with key stakeholders will be enhanced in the next semester, with the production and dissemination of the Info Learning Series and several gender case-studies.** The stakeholder engagement survey highlighted the demand for more and better communications, and a more interactive platform for the AIP-Rural website. New media and crisis communications guidelines are being developed and implemented next semester.

## 4 Stakeholder relationship management

### 4.1 Government of Indonesia national and sub-national agencies

**Bojonegoro District Government invited TIRTA to support the Dinas Pertanian in the evaluation of their HPPA program.** The evaluation workshop was attended by 74 HPPAs and revealed that 80% of them are not functioning effectively, and the remaining 20% have ceased operation. TIRTA will support the next workshop in March and use it as a platform to introduce best practices in irrigation systems design and operation, and Irrigation Consulting.

**Interactions with the Dinas Pertanian, BBWS, Public Works and the Director of Irrigation highlighted the demand for improved coordination among these agencies which are involved, through different means and extents, in the establishment of HPPAs and in the delivery of irrigation related subsidies.** TIRTA will facilitate interactions between these agencies and private sector irrigation providers so as to i) avoid potential overlap of private irrigation expansion in areas that are targeted by government subsidies and vice versa and; ii) share evidence and lessons learnt from partnerships with HPPAs and the private sector. The request for best practices will be addressed by the broader communications and learning dissemination plan that the program has planned for S1 and S2.

**A separate follow-up meeting will be held with Dinas Pertanian in relation to a new groundwater irrigation program they plan to implement in 2018.** The Dinas Pertanian will share the preliminary locations it has identified for its program implementation, and TIRTA will provide information related to existing irrigation schemes that the program might affect.

**Next semester will see closer interaction with the Ministry of the Villages** in relation to the support TIRTA will provide to their training centers to improve the capacity of BUMDes to manage irrigation schemes.

## 4.2 Private sector partners

**TIRTA is now partnering with 8 private sector irrigation providers, and engaging with 5 new partners for the pipeline interventions.** These include large and medium size entrepreneurs that have various degrees of experience in irrigation. TIRTA's new partners proved more dynamic and amenable to invest in irrigation and adopt new approaches. Similarly, brokering new deals was relatively quicker – a result of the improved capacity of the team, the ability to showcase evidence from the initial schemes supported by the program, and Mesindo's involvement in all new interventions.

**G-HIPPA partners remain challenging due to institutional shortcomings, and the upgrading necessitated is beyond the means and scope of the program.** Community led schemes are by nature dependent on public subsidies and lack the legal status and requirements to access finance, or credibility and trust to leverage capital from alternative sources. Poor leadership, misaligned incentives of HIPPA's management and village administration often lead to the misuse of funds, lack of transparency, and ultimately profit erosion. Nevertheless, the new HIPPA partner in Kedungrojo has relatively strong management with transparent communication, standard practice on financial book keeping and good commitment to improve and expand their irrigation service.

**The intervention with the BUMDes was scaled down for similar reasons** – although the partner showed a lot of promise from the onset, weak management capacity slowed down the construction progress, and their complete dependency on the Dana Desa fund called for a reduction in scale compared to the expansion plan agreed upon with the partner.

**An overarching AIP-Rural Stakeholder Engagement Perception Survey was conducted in December 2017 among DFAT, Gol and partners and AIP-Rural staff, with 38 external and 91 internal staff respondents.** The survey has provided the Communications Unit with a basis for updating the effectiveness of AIP-Rural's communication, and revealed: a clear demand for more targeted and accessible information on events, fairs, expos from the private sector; more information about achievements, forums, expos and workshops from district governments and research institutes; strong positive perceptions of the program; and, a high (89%) commitment of partners, including TIRTA's, to continue and expand collaboration.

## 5 Operations and finance

### 5.1 Operations

**The 'One Operations' model continues to work well providing efficient and effective support to all three programs.** Capacity of staff is increasing, and the high output of operational activities has required changes to some position descriptions to better share the workload. The Finance team has implemented more focussed duties and a job-rotation to increase cross-skilling and to provide greater variety in tasks. The Provincial Admin Officers have taken on increased duties.

**An external audit was held in late October, and wrap-up discussions noted a high level of quality for our procedures and supporting documentation.** The Palladium Director Risk management, Global Finance and IT (Finance) conducted an internal systems audit and congratulated the team on the quality and robustness of our Practice Notes and tools, and provided staff with refresher training on fraud.

**The Contracts and Procurement Team continue to develop innovative contracting strategies** and have recently created a tripartite Partnership Agreement that allows our partners to work together determining who will do what and when, and invoice accordingly to the limit of the overall agreement. This provides greater flexibility and better reflects the working environment of the private sector.

**The Program Budget has undergone a complete re-structuring to focus on commitments as opposed to interventions.** As part of the re-structuring process, project teams are now completing their monthly forecasts using a set template that allows senior management to easily drill down to a greater level of detail

(where required) to verify unit rates and assumptions. The template also enables project teams to monitor their expenditure against forecasts more easily. Where possible, budgets have been grouped by cost types and portfolios to simplify the coding and provide accountability in terms of measuring deliverability. This is a new process for many staff and teams have received additional training. Early results are positive and expected to improve further over the coming months.

## 5.2 Human Resources Management

**TIRTA's team has been consolidated through one additional Senior Business Consultant, two Business Consultants and one Principal Business Consultant.** The SBC and BCs are new hires from Cohort 5, and they attended a month-long induction program consisting of both classroom and on the job training, while the PBC has transitioned from PRISMA to working alongside the TL to supervise the interventions and coordinate the SBCs.

**The team structure has been refined into three portfolios, each managed by one SBC with the support of one BC and one assistant who are based in Bojonegoro.** The Deputy Team Leader role has been adapted to the new management structure to assume an advisory and relationship management function in virtue of his in-depth knowledge of the local context and brokering ability.

**TIRTA's MRM Business Consultant has been relocated to Surabaya in alignment with AIP-R integrated MRM structure.**

**Staff capacity focussed on MRM and the market systems development approach.** New staff members joined a week-long MRM training session, and one SBC joined the Springfield M4P training.

**For personal reasons, TIRTA's Team Leader, Phillippe Lyssens, decided to leave the program. AIP-Rural's program director, Tim Stewart, provided in-country support to ensure the seamless transition and allow sufficient time to the new TL to get up to speed with the program.** This semester's achievements, and the progress towards the program's targets, provide strong evidence that Nasir Ahmed, the new TL, is fit for the role and can lead the program towards the achievement of its targets.

**The capacity of staff remains critical to the program's success, and this is being addressed in the new Human Resources Management (HRM) Strategy.** The HRM strategy brings together the disciplines of personnel management, and human resource development, and aligns our HRM strategic objectives with the Program's Organisational Strategy.

**The Performance Management Guidelines have been revised** to reflect a competency based framework and will be trialled in January 2018. The staff performance reviews will feed into ongoing capacity building of staff in the final year. An HRD specialist will be engaged to better manage this process

## 5.3 IT and MIS

**PMT and QMT tools have been improved during this semester.** The PMT has become more user friendly enabling the implementation team to timely update their intervention progress and utilise real-time infographics which support adaptive management and timely implementation. Suggestions for further refinement of the QMT were proposed and accepted at the January strategy meeting and will be implemented next semester.

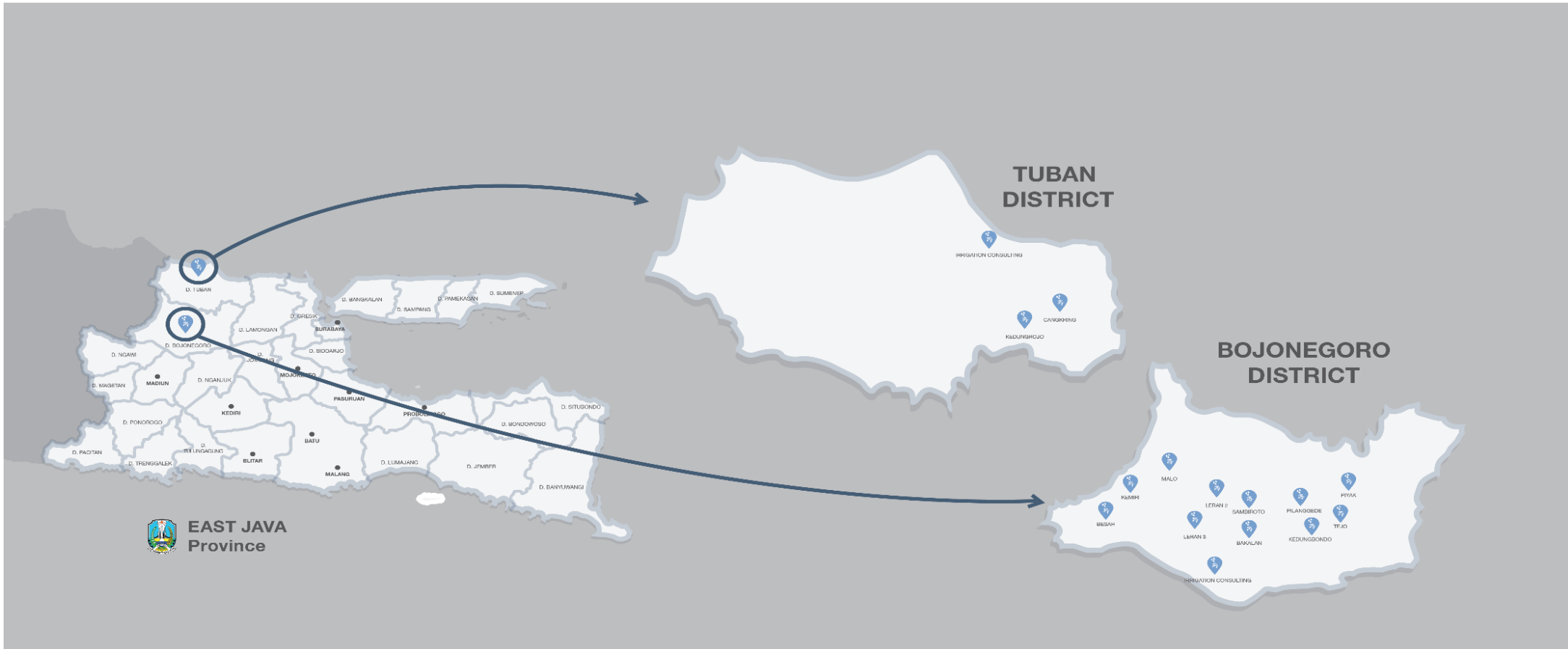
**The socialisation of Power BI was provided for implementation staff in November 2017,** the focus of the socialisation was on the use of Power BI to better support their work. Power BI Pro licenses have also been provisioned for 25 users for all AIP-Rural teams.

**Improved internet access in the provincial office in Bojonegoro has enabled staff to get to main program server** improving staff efficiency and communications.









**EAST JAVA**

**BOJONEGORO**

Besah	Tertiary Irrigation, Productivity Enhancement
Bakalan	Tertiary Irrigation
Kemiri	Tertiary Irrigation, Productivity Enhancement
Leran 2	Tertiary Irrigation, Productivity Enhancement
Leran 3	Tertiary Irrigation, Productivity Enhancement
Malo	Tertiary Irrigation, Productivity Enhancement, Irrigation Management
Pilanggede	Tertiary Irrigation, Productivity Enhancement
Piyak	Tertiary Irrigation, Irrigation Management
Tejo	Tertiary Irrigation, Productivity Enhancement
Kedungbondo	Tertiary Irrigation
Sambiroto	Tertiary Irrigation
Bojonegoro	Irrigation Consulting

**TUBAN**

Cangkring	Tertiary Irrigation, Productivity Enhancement
Kedungrojo	Tertiary Irrigation
Tuban	Irrigation Consulting

# Annex 1: Intervention Progress

1. DEVELOPMENT AND PROMOTION OF IRRIGATION CONSULTING SERVICES: **MESINDO**
2. PROMOTION OF INTEGRATED PRODUCTIVITY ENHANCEMENT: PARTNERSHIP BROKERING BETWEEN IRRIGATION AND INPUT PROVIDERS: **HEXTAR-DGW**
3. IRRIGATION EXPANSION AND INTEGRATED PRODUCTIVITY ENHANCEMENT THROUGH IN-KIND CREDIT: **PILANGGEDE**
4. IRRIGATION EXPANSION: **LERAN 2**
5. IRRIGATION EXPANSION MANAGEMENT CAPACITY BUILDING PILOT AND PRODUCTIVITY ENHANCEMENT: **MALO**
6. MANAGEMENT CAPACITY BUILDING PILOT: **PIYAK**
7. IRRIGATION EXPANSION AND INTEGRATED PRODUCTIVITY ENHANCEMENT: **KEMIRI**
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10. IRRIGATION EXPANSION AND PRODUCTIVITY ENHANCEMENT: **TEJO**
11. IRRIGATION EXPANSION: **KEDUNGBONDO**
12. IRRIGATION EXPANSION AND INTERVILLAGE AGREEMENT: **BAKALAN**
13. IRRIGATION EXPANSION: **KEDUNGROJO**
14. IRRIGATION EXPANSION AND INTEGRATED PRODUCTIVITY ENHANCEMENT: **CANGKRING**
15. IRRIGATION EXPANSION: **SAMBIROTO**

# DEVELOPMENT AND PROMOTION OF IRRIGATION CONSULTING SERVICES: MESINDO



## Constraints

- Inadequate irrigation technical knowledge systematically leads to low returns from irrigation and high incidence of financial failure – a consequence of technical inefficiencies in the way irrigation systems are set up and managed.
- Skepticism 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, prevents private sector agents from serving the irrigation market

## Vision of Change

Irrigation providers are aware of the benefits deriving from irrigation consulting to improve the technical and business performance of irrigation provision. The private sector understands the potential to serve the irrigation sector through the provision of irrigation advisory services.

## TIRTA's Approach

TIRTA partners with CV. Multi Mesindo Jaya, a pump retailer of reputed pump brands, to support expansion and diversification of their business through: i) technical capacity development, and ii) marketing and promotion of their business offers to the irrigation providers and other relevant stakeholders.

## Progress and signs of systemic change

By the end of 2017, within one semester, Mesindo has issued seventeen audits/design reports – twelve additional, three of which to independently sourced potential clients. Irrigation providers are progressively adopting the technical solutions. To optimise the market penetration in Bojonegoro and Tuban, Mesindo has established a new office in Bojonegoro and hired new field staff.

Beyond the two irrigation providers who paid for the consultancy, the service is gaining traction among irrigation providers who expressed interest in hiring Mesindo for future expansion or further improvement of the service. Mesindo are surveying potential clients in the area – strengthened technical and business capacity is expected to lead to sustained progress in the following semesters.

Although it is too early to assess the sustainability of irrigation consulting, the service has already proved relevant and effective. The intervention is rated as successful.

# PROMOTION OF INTEGRATED PRODUCTIVITY ENHANCEMENT: PARTNERSHIP BROKERING BETWEEN IRRIGATION AND INPUT PROVIDERS HEXTAR-DGW



<b>Partner</b>	Hextar – DGW
<b>Stage</b>	Pipeline
<b>Projected Outreach</b>	858 HH
<b>Impact to date</b>	-
<b>Partner Investment to date</b>	-
<b>Turnover Increase</b>	-

## Constraints

- Poor application of agricultural inputs and GAP result in low yields and even crop failure. As irrigation is paid in-kind as a share of the harvest, poor crop productivity lowers the returns from irrigation and can lead to failure of irrigation business.

## Vision of Change

Agriculture input suppliers and irrigation providers enter business relationships whereby irrigation providers promote the use of improved inputs and GAP to the irrigation users, and receive dedicated support and/or incentives to purchase large quantity of inputs which are distributed to irrigation users. This increases crop productivity and corresponding profit from irrigation business.

## TIRTA's Approach

To achieve this vision, TIRTA partners with Hextar to promote the use of high quality commercial fertiliser among irrigation providers and irrigation users. Irrigation providers are encouraged to become stock points of commercial fertiliser and facilitate demoplots and training among their irrigation users.

## Progress and signs of systemic change

Successful activities with Hextar in S1Y17 attracted the interest of DGW Hextar's sister company which main business is the production and sales of pesticides. DGW joined three of the sessions planned by Hextar and decided to enter into a partnership with Hextar and TIRTA. Three key activities are covered in the intervention: (1) promotional activity (demoplot, farmers meeting and expo); (2) training of trainers (ToT) for retailers; and (3) integration of input producers and irrigation provider.

To attract partnerships with irrigation providers, TIRTA facilitated a business linkage workshop – the workshop was attended by 22 irrigation providers. After the event, seven irrigation providers directly engaged with Hextar-DGW to become a stock point and/or facilitate Hextar-DGW to conduct trainings and demoplots. In November-December 2017, without TIRTA's direct support, Hextar-DGW have accessed 503 farmers from the events facilitated/supported by the irrigation providers in several areas across Bojonegoro and Tuban districts.

The cooperation between TIRTA and Hextar on the PE program in Leran 3 has increased the income by 28%, up to IDR 1,275,573.00/HH for 100 HH, conversion ratio from user to benefit is 73%, which is considerably high.

The intervention is rated as successful at this stage – the business model is promising and has the potential to catalyse additional investment in tertiary irrigation as a result of improved and reliable profits. The impact on farmers' income further sustain TIRTA's impact.

# IRRIGATION EXPANSION AND INTEGRATED PRODUCTIVITY ENHANCEMENT THROUGH IN-KIND CREDIT: PILANGGEDE



<b>Partner</b>	Rosa Abadi (Haji Achsin)
<b>Stage</b>	Complete – Monitoring
<b>Projected Outreach</b>	703 HH
<b>Impact to date</b>	703 HH
<b>Partner Investment to date</b>	AUD 205,797
<b>Turnover Increase</b>	AUD 141,740

## Constraints

- Low paddy yields due to poor application of agricultural inputs and lack of GAP leads to low returns from irrigation, and thereby making irrigation provision in the area less attractive
- High incidence of pest outbreaks leading to potential crop failure makes irrigation provision in the area high-risk

## Vision of Change

Irrigation provider de-risks the investment and secures higher profits from irrigation by embedding the provision of agriculture inputs and facilitating GAP training to improve farmers' practices and ultimate yields.

## TIRTA's Approach

TIRTA partners with Syngenta and a local irrigation provider, Haji Achsin, to pilot an integrated business model whereby Syngenta, facilitated by the irrigation provider, conducts demoplots and trainings on crop protection, and allocates dedicated staff in the area. Haji Achsin further supports adoption through in-kind credit for Syngenta pesticides.

## Progress and signs of systemic change

The demoplots, trainings, and Syngenta's presence in Pilanggede gave confidence to Achsin to proceed with first expansion (100 Ha) and then following 70 Ha expansion of the irrigation system. Through collaboration with Syngenta, he also provided in-kind credit on pesticides products with value of AUD 1,390 to 159 farmers in Pilanggede. Whereas the quality of irrigation is good and Achsin made further investment to maintain the system, the in-kind credit component of the model was down-sized in the second season as repayment was low due to a flood and following pest outbreak that lowered average productivity. The partner did attempt to broker a better deal with Syngenta to obtain a discount against bulk-buying, yet Syngenta did not meet Achsin's request. Nevertheless, he continued to provide in-kind credit to a smaller proportion of trusted farmers. The last impact assessments in the second dry season 2017, showed that farmers' adoption of Syngenta's crop protection package has been stagnant – with farmers using on average only three products out of nine recommended.

Witnessing the quality of irrigation in Pilanggede, a neighbouring village requested Achsin to expand his business in the area. Without program support, he expanded his service to 80 additional Ha in Kedungbondo serving 248 additional HH.

Rats infestation are now the biggest threat to yields – this is believed to be a result of different planting cycles in Kedungbondo. Achsin planned to synchronise planting by revising the schedule of his irrigation system.

Overall the intervention is rated as successful – showing strong signs of adopt and adapt.

# IRRIGATION EXPANSION: LERAN 2



<b>Partner</b>	Kusandi
<b>Stage</b>	Completed – Monitoring
<b>Projected Outreach</b>	105 HH
<b>Impact to date</b>	89 HH
<b>Partner Investment to date</b>	AUD 29,020
<b>Turnover Increase</b>	AUD 51,700

## Constraints

- Poor infrastructure design and related hydraulic inefficiencies, lack of operations and maintenance, and weak management capacity led to sub-optimal returns and ultimately forced the HIPPA to cease operations.
- The poor performance of the system limits the private sector provider who took over to serve only a small area

## Vision of Change

Access to irrigation technical assistance enables improvement in 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's Approach

To achieve this vision, TIRTA facilitates access to irrigation technical assistance to improve the system and reach full potential.

## Progress and signs of systemic change

TIRTA facilitated access to irrigation technical assistance provided by an international consultant. The irrigation providers adopted the technical solution which doubled the pump capacity and allowed him to serve 30 additional Ha in the first operational season.

The intervention is rated as successful – the partner has been progressively investing in the scheme and rehabilitated a distribution channel serving 10 additional ha in the following season.

Although the speed and scale of the expansion are not sufficient to justify further facilitation for the program, the intervention proves the relevancy of irrigation consulting - the willingness of the private sector to invest in tertiary irrigation and the positive impact investment by the program can trigger in attracting investments into the sector that sustain without program's support.

In addition, the intervention suggests the potential of relatively cheaper and less complex improvements to irrigation systems that can increase the sustainability and efficacy of irrigation businesses.

# IRRIGATION EXPANSION MANAGEMENT CAPACITY BUILDING PILOT AND PRODUCTIVITY ENHANCEMENT: MALO



<b>Partner</b>	GHIPPA Berkah Tirta Mandiri Malo
<b>Stage</b>	On-Going
<b>Projected Outreach</b>	814 HH
<b>Impact to date</b>	184 HH
<b>Partner Investment to date</b>	AUD 113,614
<b>Turnover Increase</b>	AUD 53,672

## Constraints

- Poor infrastructure design and related hydraulic inefficiencies limit the performance of the irrigation system
- Poor irrigation management further prevented the G-HIPPA from operating the system efficiency and effectively
- Low paddy yields due to poor agricultural inputs and GAP leads to low returns from irrigation

## Vision of Change

Access to irrigation technical assistance enables improved irrigation design and thus the performance of irrigation schemes, while access to management capacity building leads to improved management and returns. Farmers have access to GAP trainings which improve GAP and productivity, and hence sustained returns from irrigation.

## TIRTA's Approach

To achieve this vision, TIRTA facilitates access to irrigation technical assistance to improve the system and reach full potential, and access to an irrigation management capacity building training for the G-HIPPA. Syngenta is facilitated to conduct demoplots and GAP training to farmers in the area.

## Progress and signs of systemic change

Although irrigation technical assistance has improved the capacity of the irrigation system, the capacity building training delivered by IPB (consisting of class-room training, exposure visit to a successful HIPA and coaching sessions) was not sufficient to improve the G-HIPPA's capacity to effectively operate the scheme and address the institutional shortcomings of G-HIPPA Malo. The G-HIPPA decided to operate the scheme below full capacity and irrigated only 105 Ha, of which 40 Ha are additional and reached 126 farm HH in Tambakromo village. Poor financial management and observed misaligned incentives led to a financial loss. Failure of on-time bill payment led PLN to disconnect electricity.

The intervention is rated as not successful at this stage. Nevertheless, interactions with TIRTA led the Dinas Pertanian, which originally set up the irrigation system, to ask TIRTA's support to identify private sector providers willing to take over the scheme. The initial financial burden required to repay the G-HIPPA's debt of AUD 55,000 and re-install the electricity connection is quite high. This financial burden coupled with G-HIPPA's lack of transparency makes the scheme not very attractive, but Dinas Pertanian is willing to broker a deal between private investor and the G-HIPPA whereby G-HIPPA will pay back the financial obligation through adjustment over crop-share.



# MANAGEMENT CAPACITY BUILDING PILOT: PIYAK



<b>Partner</b>	GHIPPA Sumber Barokah Piyak
<b>Stage</b>	Completed – Monitoring
<b>Projected Outreach</b>	125 HH
<b>Impact to date</b>	112 HH
<b>Partner Investment to date</b>	AUD 8,897
<b>Turnover Increase</b>	AUD 3,988

## Constraints

- Poor infrastructure design and related hydraulic inefficiencies limit the performance of the irrigation system
- Poor irrigation management further prevents the G-HIPPA from operating the system efficiently and effectively

## Vision of Change

Access to irrigation technical assistance enables improved irrigation design and thus the performance of irrigation schemes, while access to management capacity building leads to improved management and returns.

## TIRTA's Approach

To achieve this vision, TIRTA facilitates access to irrigation technical assistance to improve the system and reach full potential, and access to an irrigation management capacity building training for the G-HIPPA.

## Progress and signs of systemic change

Although the technical solutions were adopted by the G-HIPPA leading to improved capacity of the irrigation system, the capacity building training delivered by IPB (consisting of class-room training, exposure visit to a successful HIPA and coaching sessions) was not sufficient to improve the G-HIPPA's capacity to effectively operate the scheme and address the institutional shortcomings of G-HIPPA Piyak – nevertheless, the G-HIPPA showed some improvements in the operations and management of the system; examples are book-keeping and completion of financial reports.

The system operated for two seasons, covered 67 Ha and 382 HH. The quality of irrigation was poor and (U to B ratio of 30%). Low returns and lack of capital are likely to force the G-HIPPA to cease operations. The G-HIPPA is also exploring options to partner with private sector irrigation providers; which is unlikely at this stage, given most of the farmers in the area produce maize during dry season two.

# IRRIGATION EXPANSION AND INTEGRATED PRODUCTIVITY ENHANCEMENT: KEMIRI



<b>Partner</b>	Haji Arifin
<b>Stage</b>	On-going Intervention
<b>Projected Outreach</b>	391 HH
<b>Impact to date</b>	280 HH
<b>Partner Investment to date</b>	AUD 182,944
<b>Turnover Increase</b>	AUD 76,664

## Constraints

- Relatively complex topography increases the risks of providing irrigation in absence of adequate technical knowledge
- Low paddy yields due to poor agricultural inputs and GAP lead to potential low returns from irrigation

## Vision of Change

Access to irrigation technical assistance enables effective and profitable irrigation provision. Farmers have access to GAP trainings which improve GAP and productivity and hence sustained returns from irrigation.

## TIRTA's Approach

To achieve this vision, TIRTA facilitates access to irrigation technical assistance which allows Arifin, a local irrigation provider, in the area to expand his business. The partner is also introduced to Syngenta to promote improved GAP to the irrigation users to de-risk the investment and increase returns from irrigation.

## Progress and signs of systemic change

The partner initiated the expansion without receiving technical assistance but using local knowledge and the common trial and error approach. Progress was much slower than planned and the irrigation system performing at much lower capacity than agreed upon i.e. 130 Ha vs 400 Ha.

Although Arifin is one of the most experienced and largest providers in the area, Kemiri provides additional evidence that the inefficiencies deriving from poor irrigation design and equipment are key constraints to the efficiency and sustainability of irrigation. The partner was subsequently introduced to Mesindo who confirmed that the pumping system installed was not sufficient to cover the planned expansion area.

The partner continues to make adjustments to the scheme, but to date has not fully followed the recommendations from Mesindo.

# IRRIGATION EXPANSION AND INTEGRATED PRODUCTIVITY ENHANCEMENT: LERAN 3



<b>Partner</b>	Drs. H. Pawitnar
<b>Stage</b>	On-going Intervention
<b>Projected Outreach</b>	751 HH
<b>Impact to date</b>	300 HH
<b>Partner Investment to date</b>	AUD 25,804
<b>Turnover Increase</b>	AUD 34,018

## Constraints

- Limited irrigation technical knowledge prevents the irrigation provider from expanding the irrigation business
- Low paddy yields due to poor agricultural inputs and GAP leads to potential low returns from irrigation

## Vision of Change

Access to irrigation technical assistance enables effective and profitable irrigation expansion. Farmers have access to GAP trainings which improve GAP and productivity and hence sustained returns from irrigation.

## TIRTA's Approach

To achieve this vision, TIRTA facilitates access to irrigation technical assistance which allows the irrigation provider in the area to expand his business. The partner is also introduced to Hextar to promote improved GAP to the irrigation users to de-risk the investment and increase returns from irrigation.

## Progress and signs of systemic change

Pawitnar, the irrigation provider, has replaced its pumps to an electric pump and started irrigating with a new irrigation system in early August 2017. The new irrigation system enables Pawitnar to improve water flow and expand his irrigation scheme to additional 50 Ha. Pawitnar has reduced his operational cost from IDR 200 million (fuel cost) to IDR 100.73 million (electricity cost) per season. The U-ditch construction is completed and will allow Pawitnar to expand his business to 100 additional Ha in dry season 1 2018.

TIRTA has also facilitated Hextar's promotional activities for 8 farmers meetings, 10 demoplot points, and 1 mini expo in Leran 3 intervention area (Ngablak, Ngulanan, Sukoharjo, and Sumbertlaseh villages). The positive outcomes of Hextar's (HFI) intervention attracted the interest of Dharma Guna Wibawa (DGW), Hextar's sister company which main business is the production and sales of pesticide, to join in Leran 3 activities. The events were attended by 448 farmers (339 male and 109 female) and 137 of them became Hextar and DGW users (30.58% access to use ratio) within the same season.

The impact assessment determined improvements to farmers' productivity in the existing area attributable to the use of GAP and better irrigation quality, a result of the technical solutions adopted by the provider, which benefitted 300 additional farm HH.

# IRRIGATION EXPANSION AND INTEGRATED PRODUCTIVITY ENHANCEMENT: BESAH



<b>Partner</b>	UD Anugrah
<b>Stage</b>	On-going Intervention
<b>Projected Outreach</b>	542 HH
<b>Impact to date</b>	-
<b>Partner Investment to date</b>	AUD 256,236
<b>Turnover Increase</b>	-

## Constraints

- Complex topography increases the risks of providing irrigation in absence of adequate technical knowledge (the irrigation provider lost IDR 3 billion due to improper irrigation design)

## Vision of Change

Access to irrigation technical assistance enables effective and profitable irrigation provision in complex areas.

## TIRTA's Approach

To achieve this vision, TIRTA facilitates access to irrigation technical assistance which allows the irrigation provider in the area to expand his business.

## Progress and signs of systemic change

UD. Anugrah hired Mesindo to conduct the irrigation system audit and design – the proposed design was fully adopted by the partner who also purchased high quality pumps from Mesindo. The irrigation system reached full operational in December 2017 covering 210 Ha and 417 farm HH in Besah and Sidomukti villages.

In response to an early indication of a pest outbreak, UD Anugrah contacted Hextar-DGW, to facilitate a mass-spraying in the area to limit the risk of crop failure and secure sufficient profit from irrigation. The quick response was made possible through the Whatsapp group between Hextar-DGW and irrigation providers. A follow-up farmer meeting was conducted to control the pest population and educate farmers in Besah to achieve higher productivity. This happened with no program support and costs shared between UD. Anugrah and Hextar-DGW. UD. Anugrah has now decided to test the integrated business model and promote the use of improved inputs and GAP among the irrigation users.

Besah is rated as very successful – the scheme is being used as a demonstration sites to promote the benefit from irrigation consulting. The partner is ready to scale-up.

# IRRIGATION EXPANSION AND PRODUCTIVITY ENHANCEMENT: TEJO



<b>Partner</b>	BUMDes Mitra Sejahtera
<b>Stage</b>	New Intervention
<b>Projected Outreach</b>	247 HH
<b>Impact to date</b>	-
<b>Partner Investment to date</b>	AUD 9,940
<b>Turnover Increase</b>	-

## Constraints

- Limited irrigation technical knowledge prevents the BUMDes from operating the irrigation business profitably and effectively
- Low paddy yields due to poor agricultural inputs and GAP leads to potential low returns from irrigation

## Vision of Change

Access to irrigation technical assistance enables effective and profitable operations of the existing irrigation system and enables irrigation expansion. Farmers have access to GAP trainings which improve GAP and productivity and hence sustained returns from irrigation.

## TIRTA's Approach

To achieve this vision TIRTA facilitates access to irrigation technical assistance which allows the irrigation provider in the area to expand his business. The partner is also introduced to Hextar to promote improved GAP to the irrigation users to de-risk the investment and increase returns from irrigation.

## Progress and signs of systemic change

Mesindo has conducted a pump audit for BUMDes Tejo against a fee - the BUMDes has covered the first instalment so far. One key recommendation has been adopted; the BUMDes is setting up a system which will allow the pumps to be repositioned according to the water level. BUMDes Tejo also installed 1,100 meters of pipes as the distribution channel to the expansion area. A delay of the infrastructure development is caused by the insufficient fund / budget allocation from the village fund. TIRTA is monitoring the progress closely to ensure that the system will be operational in the first dry season.

BUMDes Tejo engaged with Hextar and DGW to minimise a pest outbreak which emerged during the rainy season – Hexatr/DGW conducted one mass-spraying event and one farmer meeting. Farmers from the surrounding areas also participated in the promotional activity and showed positive feedback, over 70% of the participants bought the products.

The intervention so far is progressing slower than expected, mainly due to the inability of BUMDes to timely source fund for investment.

# IRRIGATION EXPANSION: KEDUNGBONDO



<b>Partner</b>	UD. Rosa Abadi
<b>Stage</b>	New Intervention
<b>Projected Outreach</b>	152 HH
<b>Impact to date</b>	-
<b>Partner Investment to date</b>	AUD 4,030
<b>Turnover Increase</b>	-

## Constraints

- Limited irrigation technical knowledge prevents the irrigation provider from expanding the irrigation business in the area

## Vision of Change

Access to irrigation technical assistance enables effective and profitable operations of the existing irrigation system and enables irrigation expansion.

## TIRTA's Approach

To achieve this vision TIRTA facilitates access to irrigation technical assistance which allows the irrigation provider in the area to expand his business.

## Progress and signs of systemic change

UD Rosa Abadi has independently expanded his business in Kedungdondo triggered by the first expansion of his irrigation business in Pilanggede supported by the program. Although UD Rosa Abadi is an experienced irrigation provider, it is evident that larger progressive expansion requires additional technical skills. His attempts to expand in the area showed to be ineffective.

TIRTA facilitated Mesindo to conduct a system audit in the area and developed a customised irrigation system design that reflects the capacity and vision of the partner. The draft audit report has been submitted to the partner.

UD. Rosa Abadi has procured the initial pump, pipes and equipment which are essentially required to irrigate the expansion area in Kedungbond. According to the original construction plan, UD. Rosa Abadi is expected to operate the irrigation system in dry season 1 but given the prolonged flood situation in Kedungbond, the plan may get delayed, TIRTA will closely monitor the situation and provide guidance to the partner in accordance to the field situation.

# IRRIGATION EXPANSION AND INTERVILLAGE AGREEMENT: BAKALAN



<b>Partner</b>	UD. Rosa Abadi (Haji Achsin)
<b>Stage</b>	New Intervention
<b>Projected Outreach</b>	359 HH
<b>Impact to date</b>	-
<b>Partner Investment to date</b>	AUD 14,430
<b>Turnover Increase</b>	-

## Constraints

- Due to the lack of direct access to the Bengawan Solo river by Bakalan village, it requires the irrigation system to cross the neighbouring village of Bogo; absence of legally enforceable agreements between the parties involved makes inter-village irrigation business risky and unattractive.

## Vision of Change

Irrigation providers have access to legal advisory service which enables irrigation providers to establish and operate their business with a legal framework that protects the investment and safeguard operation for sufficient number of years.

## TIRTA's Approach

To achieve this vision, TIRTA facilitates UD Rosa Abadi to hire a local law firm to develop an intervillage agreement which grants and safeguard the irrigation business to operate in the area for a determined period.

## Progress and signs of systemic change

The partner procured fee-based services of a legal firm to facilitate an intervillage agreement, signed by both village administration in Bogo and Bakalan and UD Rosa Abadi. The contract covers critical factors including the period of the operation, rights and obligations of each party regarding setting up the irrigation system, the investment and profit sharing. This agreement allowed UD. Rosa Abadi to establish a mutual business relationship with both village administrations and pursue the expansion of the irrigation business in the area.

UD Rosa Abadi started the construction after the intervillage agreement was signed – construction is 20% completed and proceeds on track to be operational in dry season 1 to cover the first 50 Ha in Bogo and 150 Ha in Bakalan in dry season 2.

The intervention is rated as successful at this stage; the legal firm will be introduced to other irrigation providers who have withdrawn from opportunities to expand in areas which required intervillage agreements or usage of public facilities such as canals. The team will closely monitor changes in this space.

# IRRIGATION EXPANSION: KEDUNGROJO



<b>Partner</b>	HIPPA Kedungrojo
<b>Stage</b>	New Intervention
<b>Projected Outreach</b>	235 HH
<b>Impact to date</b>	-
<b>Partner Investment to date</b>	AUD 1,700
<b>Turnover Increase</b>	-

## Constraints

- Poor infrastructure design and related hydraulic inefficiencies limit the performance of the irrigation system and secure sufficient returns to expand the business

## Vision of Change

Access to irrigation technical assistance enables effective and profitable operations of the existing irrigation system and enables irrigation expansion.

## TIRTA's Approach

To achieve this vision, TIRTA facilitates access to irrigation technical assistance which allows the irrigation provider in the area to optimise the irrigation system and cover a bigger area.

## Progress and signs of systemic change

TIRTA is facilitating Mesindo to assist HIPPA Kedungrojo to switch from a diesel to an electricity operated pump – a technical solution which can lower the operational costs by ~40%. Additional investment is required to develop the distribution network both in Kedungrojo and Kepohagung village. However, both villages have limited fund to be allocated and negotiation between them is still on progress. BUMDes Kedungrojo has issued a regulation (PERDES 4/2017) to allocate IDR 200 million from the Village Fund for the additional investment.

The HIPPA has relatively strong management with transparent communication, standard practice on financial book keeping and good commitment to improve and expand its irrigation service. The intervention is rated as successful at this stage. Although constrained by timely release of village fund for making investment, the HIPPA has shown strong commitment so far and taken pro-active initiatives to resolve inter-village issues. TIRTA will continue to facilitate the HIPPA for successfully setting up and operating the irrigation scheme.



# IRRIGATION EXPANSION AND INTEGRATED PRODUCTIVITY ENHANCEMENT: CANGKRING



<b>Partner</b>	UB. Mitra Usaha Tani
<b>Stage</b>	New Intervention
<b>Projected Outreach</b>	283 HH
<b>Impact to date</b>	-
<b>Partner Investment to date</b>	AUD 22,540
<b>Turnover Increase</b>	-

## Constraints

- Poor design of the pumping system including usage of second-hand low-quality pumps result in high operational costs, low returns and limited capacity to grow the irrigation business.
- Low paddy yields due to poor agricultural inputs and GAP result in low returns from irrigation

## Vision of Change

Access to irrigation technical assistance enables effective and profitable operations of the existing irrigation system and enables irrigation expansion. Farmers have access to GAP trainings which improve GAP and productivity, and hence sustained returns from irrigation.

## TIRTA's Approach

To achieve this vision, TIRTA facilitates access to irrigation technical assistance which allows the irrigation provider in the area to expand his business. The partner is also introduced to Hextar to promote improved GAP to the irrigation users to de-risk the investment and increase returns from irrigation.

## Progress and signs of systemic change

TIRTA is facilitating Mesindo to assist the irrigation service provider to optimise the existing irrigation system, Mesindo is also developing the distribution system design to reach the expansion area of around 150 Ha.

The irrigation service provider has already improved the irrigation system - both the pump station and the irrigation distribution network. The first stage of the expansion area has been operated during the rainy season, and reached 50 Ha in Sumurjalak village. Following the recommendation from Mesindo, the partner has invested in procuring new pumps, and other equipment to reach the remaining 100 Ha in the first dry season 2018.

The intervention is rated as successful and has the potential to scale-up.

# IRRIGATION EXPANSION: SAMBIROTO



<b>Partner</b>	Sudjono
<b>Stage</b>	New Intervention
<b>Projected Outreach</b>	187 HH
<b>Impact to date</b>	-
<b>Partner Investment to date</b>	AUD 12,000
<b>Turnover Increase</b>	-

## Constraints

- Poor design of the pumping system results in ineffective irrigation system which prevents the irrigation provider from profitably operating the system

## Vision of Change

Access to irrigation technical assistance enables effective and profitable operations of the existing irrigation system and enables irrigation expansion.

## TIRTA's Approach

To achieve this vision, TIRTA facilitates access to irrigation technical assistance to the irrigation provider which allows the irrigation provider in the area to optimise the irrigation system and cover a bigger area.

## Progress and signs of systemic change

Mesindo conducted an irrigation audit and provided recommendations on improving the system. Sudjono, the partner, will hire Mesindo to support the development of the irrigation system which include engineering assessment, supervision during equipment installation and consultancy during the operational stage of the irrigation system.

The installation of pipes and the system are expected to be operational in dry season one. A follow up agreement between Sudjono with the village administration of Sambiroto is necessary to secure the investment by Sudjono and protect the interest of both parties.

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## Annex 3: TIRTA's partners details

Partners' Details	
Intervention 1	Integrated Irrigation Expansion with In-kind Credit for Crop Protection in Pilanggede (1P1A)
Partners (3)	Achsin, PT. Syngenta Indonesia, Village Administration of Pilanggede
Description	Achsin is a rice miller and runs an irrigation business covering 160 Ha in two villages, namely Pilangsari and Templek – the entity was formalised in 2015 under the name UD. Rosa Abadi.
Partners rationale	<p>There is about 240 Ha of potential expansion for irrigation services in Pilanggede which farmers rely only to rainfed for their rice cultivation. Achsin wants to expand his irrigation business, and he already has an agreement with the village administration of Pilanggede to start with 150 Ha. However, 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 rationale for expanding the irrigation business is very solid, as the vertical integration allows him to generate higher returns from both businesses (irrigation and a mill), as he will be able to source more unhulled-rice for his rice milling business.</p> <p>For Syngenta to work with the irrigation providers, as opposed to marketing their products to individual farmers, is a new business model for them. It is considered to be a cost-effective market opportunity which will increase their sales.</p>
Partnership role	<p>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.</p> <p>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 to farmers in Pilanggede, Malo, and Leran 2.</p>
Intervention 2	Integrated Productivity Enhancement with Improvement on Irrigation System and Management in Malo (1K1A)
Partner	GHIPPA Malo Berkah Tirta Mandiri
Description	G-HIPPA Malo was formed and formally founded in March 2014 as G-HIPPA Berkah Tirta Mandiri and mandated by the Government to operate the irrigation system to irrigate eight (8) villages in Malo Sub-District namely Kliteh, Petak, Ngujung, Tambakromo,

	Sumberejo, Kedungrejo, Tinawun, Banaran. From mid- 2015 until mid- 2016, GHIPPA Malo operated the irrigation service, but could only cover around 65 Ha.
Partners rationale	With the infrastructure provided by the government, GHIPPA Malo is responsible for delivering irrigation service for 8 villages, covering about 535 Ha. GHIPPA Malo is not equipped with the sufficient capacity to run the irrigation business in a sustainable manner. Poor design of the irrigation system also prevents GHIPPA from operating the irrigation system at full capacity. They are looking for assistance so as to improve their management capacity and also for technical advice to redesign the irrigation system, particularly so as to improve the pump-station and distribution system to ultimately achieve its full potential.
Partnership role	TIRTA supports GHIPPA Malo to improve its irrigation system by facilitating access to irrigation technical consulting and Productivity Enhancement via linkages with input supplier to provide embedded services in rice crop protection. On the management side, TIRTA also provides supports with management capacity building covering institutional development; irrigation infrastructure management; water distribution, operation and maintenance; water use management; and financial management, delivered by a subcontractor (LPPM IPB).
Intervention 3	Irrigation System and Management Capacity Improvement in Piyak (1P2A)
Partner	GHIPPA Piyak - Sumber Barokah
Description	G-HIPPA Piyak was formed and formally founded in August 2016 as G-HIPPA Sumber Barokah and is mandated by the Government to operate the irrigation system to irrigate five (5) villages in Kanor Sub-District namely Sedeng, Bakung, Bungur, Sumberwangi and Simorejo.
Partners rationale	With the infrastructure provided by the government, GHIPPA Piyak is responsible for delivering irrigation service for 5 villages covers about 551 Ha. 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, exposure visits and coaching sessions to improve their capacity in irrigation management, and assign LPPM-IPB as a subcontractor to conduct the whole package of the capacity development program. The capacity development covers: institutional development; irrigation infrastructure management; water distribution,

	operation and maintenance; water use management; and financial management. In addition to this, TIRTA also supports GHIPPA Piyak with access to irrigation technical audits in order to re-design their irrigation system to gain better efficiency.
Intervention 4	Irrigation System Improvement in Leran 2 (1L2A)
Partner	Kusnadi
Description	Kusnadi's main business is rice milling. He previously provided ground-water irrigation in the village, as he owns 4 Ha of land in the area. Recently, he took over the management of an irrigation system from a HIPPA that ceased to operate due to poor capacity.
Partners rationale	Improper installation of the pump station has led to low output from the pump. Kusnadi is looking for technical assistance to fix the pump station, to expand the irrigation service up to 40 Ha.
Partnership role	TIRTA provides access to irrigation technical assistance to increase the flow-rate of the pump station.
Intervention 5	Irrigation Expansion in Kemiri (1K2A)
Partner	Arifin
Description	Arifin is a local entrepreneur and irrigation provider and is currently serving more than 200 Ha in Bojonegoro and Lamongan districts.
Partners Rationale	Arifin wants to expand his irrigation business and needs support on the technical aspects to assess and design his irrigation system, as the significant height and distance from the river increases the technical complexity of irrigating the Kemiri area. Arifin is experimenting with a new methodology to recapture the water to expand irrigation services for three neighbouring villages.
Partnership Role	TIRTA supports Arifin by facilitating access to irrigation technical consulting and improvements to the irrigation system, and linkages to agro-input supplier (Syngenta).
Intervention 6	Irrigation Expansion and Productivity Enhancement in Leran 3 (1L3A)

Partner	(2) Pawitnar and PT. Hextar Fertilizer Indonesia
Description	<p>Pawitnar is an irrigation service provider in Ngablak - Ngulanan Villages (Leran 3), Bojonegoro serving 140 Ha of rice fields.</p> <p>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.</p>
Partners rationale	<p>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 that the land is completely flooded in the rainy season. He is seeking technical advice to reduce the operational costs for the current existing irrigation service, and also to expand his irrigation service.</p> <p>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.</p>
Partnership role	<p>TIRTA facilitated access to CV Multi Mesindo Jaya, an irrigation consulting service, to conduct a full audit for Pawitnar's irrigation system, and provided recommendations to improve the existing design. TIRTA also facilitates linkages with ag. input suppliers, PT. Hextar Fertilizer Indonesia. Hextar is interested in collaborating with the irrigation provider so as to enter the rice market in East Java.</p> <p>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 fertiliser.</p>
Intervention 7	Irrigation Provision Through the Promotion of Irrigation Consulting Service in Besah (1B2A)
Partner	UD. Anugrah
Description	UD. Anugrah is a family business which owns the biggest rice milling plants in Bojonegoro district. Since 2009, UD. Anugrah diversified into irrigation business in Besah village. However, due to poor irrigation system design, he stopped the irrigation service in 2013.
Partners rationale	UD. Anugrah would like to re-build the 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 rationale for expanding the irrigation business is even stronger, as the vertical integration allows him to generate higher returns from both businesses (irrigation and mill), and as he will be able to source more unhulled-rice for his rice milling business, especially during dry seasons.

Partnership role	TIRTA facilitates access to irrigation consulting services, Mesindo, which provides irrigation systems audits and design.
Intervention 8	Irrigation Provision Through Intervillage Agreement in Bakalan (1B1A)
Partner	UD. Rosa Abadi
Description	UD. Rosa Abadi is a rice miller and owns and runs an irrigation business covering 160 Ha in two villages, namely Pilangsari and Templek.
Partners rationale	High investment capital is needed as there is no infrastructure in place in Bakalan village, as well as no river-side area within Bakalan village, to extract water from Bengawan Solo river. Bogo has limited area to be irrigated which is not commercially viable for private irrigation provider. Beside these technical constraints, an intervillage agreement also needs to be in place to secure business.
Partnership role	TIRTA identified the private irrigation provider and linked them to a local legal consultant to facilitate the deal between the identified irrigation provider and both village administrations (Bakalan and Bogo villages) to establish an irrigation service for farmers in both villages through an intervillage agreement. UD Rosa Abadi is willing to invest in these area as the outreach from both villages (through the intervillage agreement) become commercially viable.
Intervention 9	Developing Irrigation Business with Village-Owned Enterprise in Tejo (1T1A)
Partner	BUMDes Mitra Bersama from Tejo village.
Description	BUMDes Mitra Bersama from Tejo village started its irrigation business in 2015. However, the BUMDes only provided irrigation service to 20 Ha of land due to the lack of technical knowledge and poorly designed irrigation system.
Partners rationale	BUMDes Tejo aims to expand its coverage area within Tejo village from 20 Ha to 130 Ha and approached TIRTA for support.
Partnership role	TIRTA engaged CV Multi Mesindo Jaya, an irrigation consultancy provider, to support the BUMDes in designing an improved irrigation system. Later, the BUMDes procured the services of Mesindo for the resetting and repositioning of the pumps and monitoring the setting up of distribution pipeline. With an improved system in place, BUMDes Mitra Bersama expects to provide irrigation services starting from April 2018.

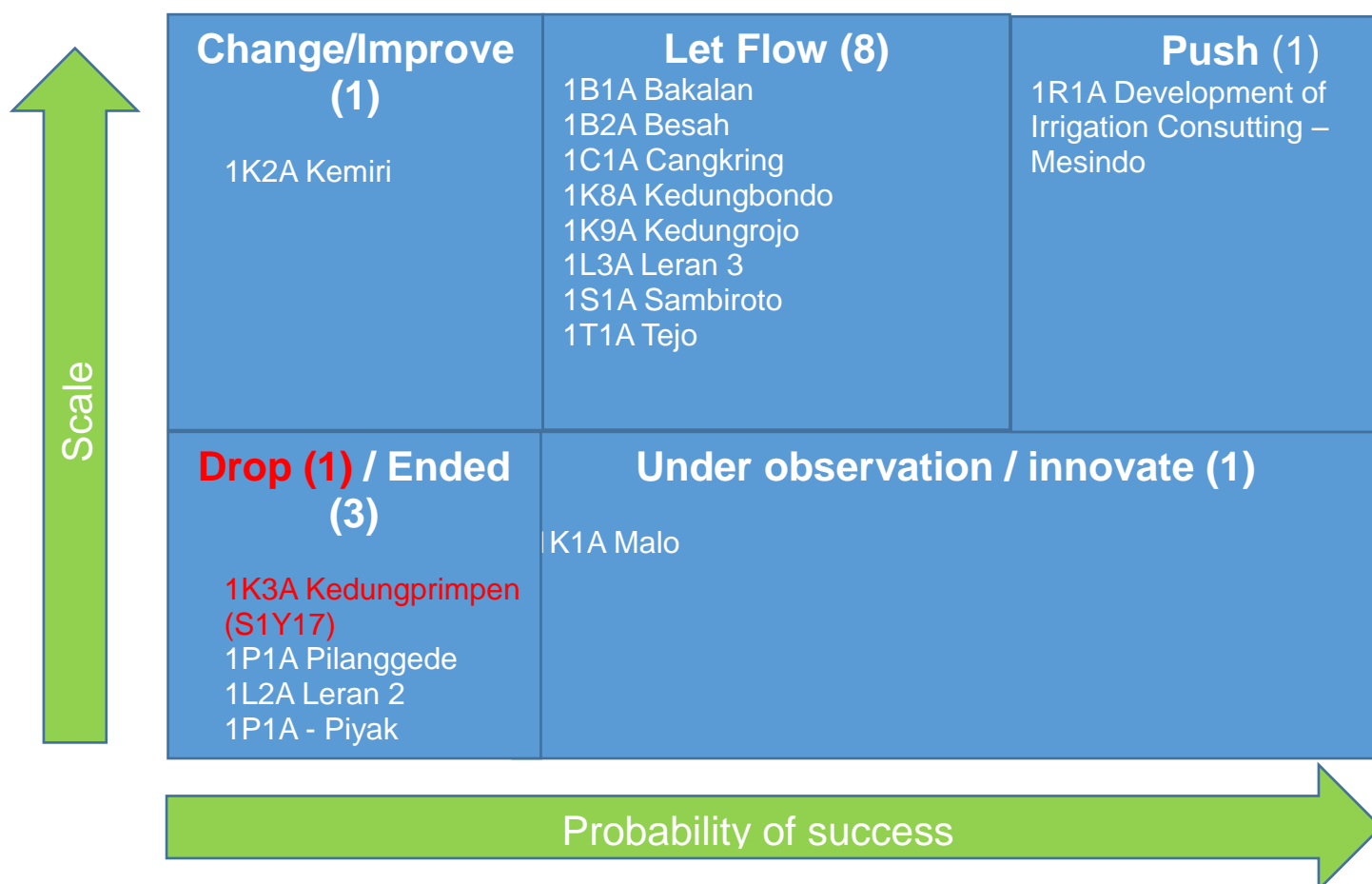


Intervention 10	Optimizing irrigation system in Kedungbondo (1K9A)
Partner	UD. Rosa Abadi
Description	UD. Rosa Abadi is a rice miller and owns and runs an irrigation business covering 160 Ha in two villages, namely Pilangsari and Templek.
Partners rationale	Adapted from the Pilanggede intervention, UD. Rosa Abadi is expanding his irrigation service to Kedungbondo village by himself, which covers about 80 Ha of Kedungbondo village, close to the Bengawan Solo river. However, there are still 64 Ha of Kedungbondo village which are not yet irrigated. The system which was constructed by Pak Achsin cannot reach the remaining 64 Ha, as the existing canal cannot get to this area due to the distance and high elevation. Furthermore, there is another 99 Ha potential expansion area in Margomulyo, thenext village to Kedungbondo.
Partnership role	TIRTA provides support for the technical assistance to improve the existing irrigation system.
Intervention 11	Upgrading Pump Station to Improve Irrigation Service in Kedungrojo (1K8A)
Partner	HIPPA Tirto Kencono from Kedungrojo village.
Description	HIPPA Tirto Kencono from Kedungrojo village (“partner”) currently serves 350 Ha within the village boundary. It plans to expand its service to the neighboring village of Kepohagung (100 Ha), which is currently unirrigated and reliant on rain-fed water.
Partners rationale	The HIPPA is facing challenges due to the poor performance of the irrigation system which results in high fuel costs and recurring downtime. The HIPPA approached TIRTA for support in improving its irrigation system and expanding to new areas.
Partnership role	TIRTA supported Mesindo, an irrigation consulting firm, to conduct an irrigation audit for the HIPPA. The HIPPA plans to follow the recommendation of the audit so as to improve its performance; the major recommendation is to switch to electric motor pumps from diesel engine pumps. The HIPPA in Kedungrojo expects that the improved irrigation system will be in place and serve the expansion area by May 2018, resulting in improved rice production for the farmers.

Intervention 12	Irrigation Technical Assistance in Cangkring (1C1A)
Partner	UB. Mitra Usaha Tani
Description	UB. Mitra Usaha Tani (TIRTA partner) was formed in 2015, with core businesses in rice milling and irrigation service provision covering 230 Ha of land in Cangkring area of Tuban district.
Partners rationale	Realizing the benefit of irrigation service provision, the company plans to expand its irrigation business to Sumurjalak and Plumpang villages.
Partnership role	TIRTA is supporting the partner with the technical design for the expansion area by engaging MMJ, a pump retailer-consultant. Following the recommendation of the irrigation audit, the partner has invested in procuring a new diesel pump, pipes, gate valves and other necessary equipment. The irrigation service provider expects to start the irrigation service provision from March 2018.
Intervention 13	Development of Irrigation Consulting Service-Mesindo (1R1A)
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 in development of the business strategy, technical capacity building and access to the irrigation providers (market).
Intervention 14	Irrigation Provision by Redesigning the Irrigation System in Sambiroto (1S1A)
Partner	Sudjono, the Village Head of Sambiroto

Description	Sambiroto is a village that receives irrigation system assistance from the CSR of one of the petroleum companies. This irrigation system plan to irrigate 150 Ha rice fields. However, the system has not run optimally because the irrigation system design is less than technically sound.
Partners rationale	Sudjono envisions to irrigate Sambiroto village and improve the infrastructure once the irrigation service is running well and gain profit to re-invest.
Partnership role	TIRTA engaged CV Multi Mesindo Jaya, an irrigation consultancy provider, to support Sudjono in designing an improved irrigation system.

## Annex 4: TIRTA QMT results



TIRTA’s mentor led a portfolio review assisted by the revised QMT which acknowledged the progress of the program.

- 8 Interventions which are progressing well against the plan will be let flow;
- 1 should change/improve as the partner’s relatively low sensitivity to technical innovations can jeopardise the success of the intervention per se, and also distract program’s resources that can be dedicated to high performing partners with strong potential and willingness to scale-up;
- 1 is under observation/innovate as a promising dynamic is emerging with the Department of Agriculture asking for support to identify private sector irrigation providers to take over from the G-HIPPA and;
- 3 interventions ended: G-HIPPA Piyak’s capacity is too low to operate and manage the scheme at full-capacity and progress further; the partner in Leran 2 continues to independently expand, evidence that TIRTA’s activities triggered sustained investments, but the speed and scope are not sufficient to support the partner further, as opposed to Pilanggede, which moved into the scale-up phase with two additional irrigation sites invested in and managed by the same partner. Finally, the progress achieved this semester is evidence of the relevancy and potential of irrigation consulting as a catalyst for improvements in and growth of the sector, so the intervention was moved to ‘push’.

## Annex 5: TIRTA Implementation Workplan

Intervention	Dry season 1	Dry season 2					Rainy Season			Dry season 1			Dry season 2				Rainy			
	2017												2018							
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Tejo IE	Pipes & System Modification					Irrigation Expansion			86			Irrigation Expansion				161				
Kemiri IE	Full System		Irrigation Expansion			280			Irrigation			111								
Kedungrojo IE	Electricity & Pipe Installation								59			176								
Cangkring IE	Pipes					Irrigation			94			Irrigation				189				
(Leran 2) IE	Irrigation					25														
Cangkring 2									Irrigation Expansion			200			Irrigation Expansion				219	
Leran 1 IE									Irrigation Expansion			108			Irrigation Expansion				255	
Pilanggede IE	Irrigation		399																	
Piyak IE	Irrigation		112																	
Malo IE	Irrigation		126																	
Bakalan IE	Full System: 2 phase Bogo-April and Bakalan -June					Irrigation - 50 Ha (Bogo)			110			Irrigation - 100 Ha (Bakalan)				249				
Kedungbondo IE	Legal Consultancy & Irrigation Channel					Irrigation - 30 Ha			52			Irrigation - 61 Ha				100				
Padangan						Irrigation - 70 Ha			101			Irrigation - 100 Ha				144				
Tinawun						Irrigation - 94 ha			198			Irrigation - 80 Ha				170				
Sambiroto IE	Irrigation Pipe & Pump Station					Irrigation - 100 Ha			187											
Leran 3 IE	Improved Existing- 140 Ha		300			Irrigation Expansion- 50 Ha			176			Irrigation - Expansion 50 Ha			99			Irrigation - Expansion 50 Ha		176
Besah IE	Full System Irrigation					Irrigation Expansion - 205 Ha			208			334								
Gayam IE	Electricity & Pipes					Irrigation - Expansion 120 Ha			271			Phase 2 Expansion				452				
Mayanggeneng IE	Pipes					Irrigation Expansion-100 Ha			176			Irrigation Expansion-100 Ha				176				
Irrigation Consulting Service	Audit and Pump Station					Improved Existing -21 Ha			38			Independent - Other irrigation provider								
Integrated Productivity Enhancement	Farmer's meeting, ToT retailers, Workshop PPL					400			Farmer's meeting, ToT retailers			458								