

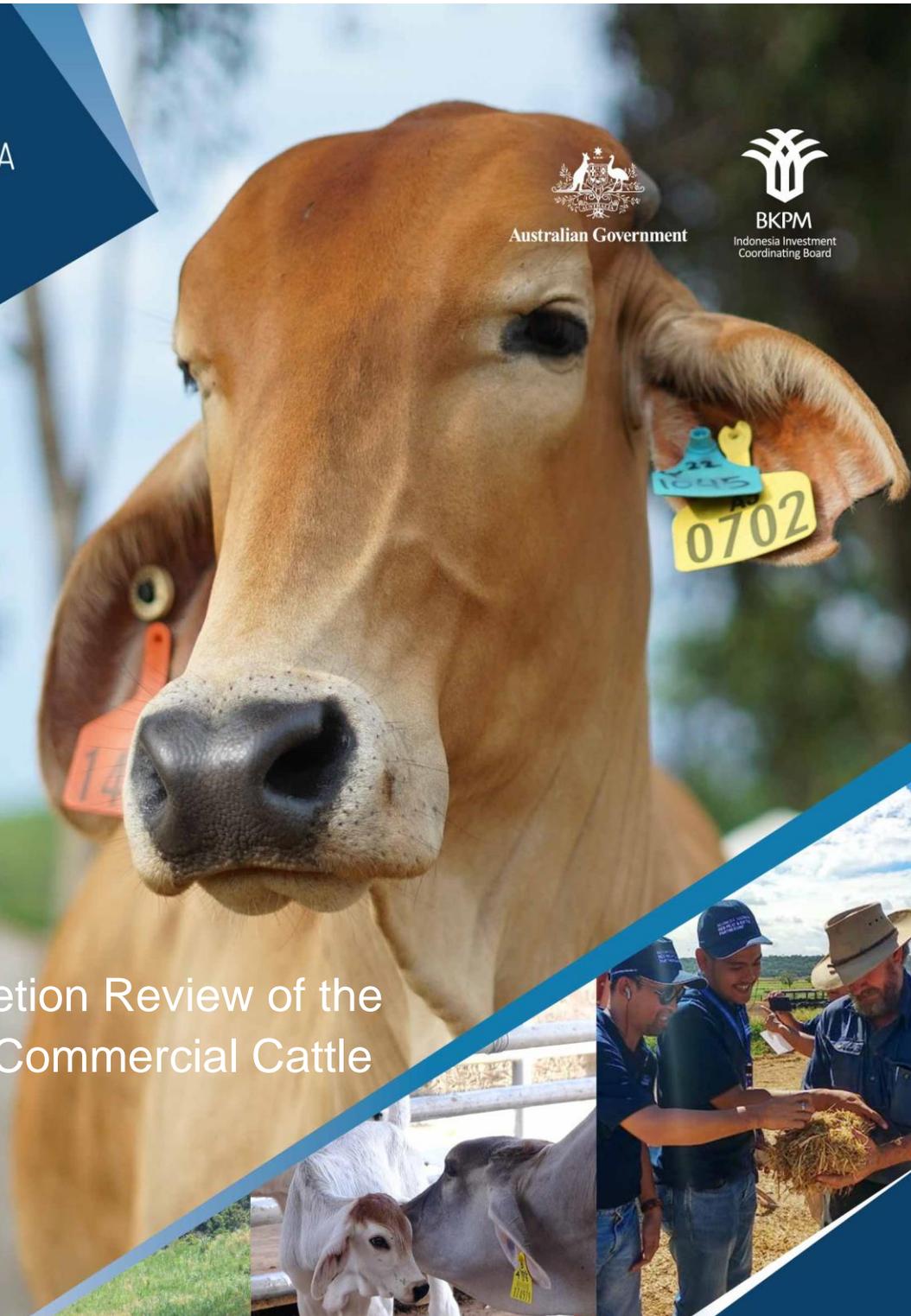
INDONESIA AUSTRALIA  
RED MEAT & CATTLE  
PARTNERSHIP



Australian Government



BKPM  
Indonesia Investment  
Coordinating Board



Independent Completion Review of the  
Indonesia Australia Commercial Cattle  
Breeding Program

January 2021



## Executive Summary

The Indonesia Australia Commercial Cattle Breeding Program (IACCB)'s investment in high-quality applied research, conducted in collaboration with commercial firms and farmer organisations, delivered credible results with long-term relevance for government and industry. The commercial viability of four cattle breeding models in Indonesia was conclusively determined and IACCB results and products have been extensively promoted to both government and the private sector, generating a positive response from the Indonesian Government.

IACCB provided comprehensive support and developed effective collaborative partnerships, which were instrumental in resolving technical issues and achieving productivity and commercial targets. IACCB's team leaders and program advisors had extensive industry experience and networks, contributing to the effectiveness of the program. By the culmination of IACCB, all seven partners had developed scale up or commercial sustainability plans, indicating their confidence in the models and their ability to drive further growth without direct IACCB support.

Along with meeting its intended goals, IACCB brought government agencies and the private sector closer together; attracted attention and support from all levels of government; and delivered significant community benefits via direct employment, including increased employment opportunities for women and the generation of downstream business opportunities. However, some missed opportunities included the testing of a feedlot/smallholder cooperative model, early engagement with local governments, and testing all the models with local cattle. More targeted support and training to each partner in their first 3 months of operation and the establishment of pastures may also have addressed a number of start-up issues.

IACCB has shown that the integrated cattle and palm model (SISKA), when implemented by large palm oil operators, offers the best opportunity to drive industry growth. However, despite the significant interest in cattle breeding generated through IACCB, the program is not generating new private sector investment outside of the current partnerships. Investor reluctance is persisting because of relatively low internal rates of return, the reluctance of banks to fund cattle breeding, and the absence of industry champions to promote momentum. To stimulate investment in cattle breeding, required the ongoing promotion of IACCB results, a more conducive regulatory environment, industry champions, and capable advisers with deep commercial cattle breeding knowledge.

There is now good momentum for leveraging IACCB outcomes through government plans and programs, which should encourage significant investment in cattle breeding.

The review's recommendations, which are summarised below, are aimed at (1) leveraging IACCB strengths, namely its well-regarded products, strong industry and government networks, and its credibility and visibility within industry and government, (2) maximising the uptake and sustainability of IACCB outputs, and (3) overcoming industry resistance to investment. Detailed recommendations are in Section 4.

1. Source a well-respected oil palm industry member to operate as a SISKA advocate/champion. The advocate will liaise with The Indonesian Palm Oil Association (GAPKI), the Indonesian Oil Palm Research Institute and the oil palm industry to investigate barriers to investment and to promote SISKA uptake.
2. Collaboratively design with the MoA a program that supports its cattle breeding policies and plans.

3. Collaboratively develop a program of Smallholder/Cut and Carry support for the 1000 Cattle Villages program.
  4. Continue to support Gol key-programs for food security in the red meat sector within the 2020-2024 RPJMN.
  5. Conduct a regulatory review of cattle breeding related policy and regulations and develop recommendations that improve their effectiveness and coherence.
  6. Develop an Industry Skills Development Strategy or Strategies focused on IACCB cattle breeding models with industry and vocational training institutions.
  7. Consider the establishment of peer-to-peer learning mechanisms and networks.
  8. Continue to provide targeted support to partner training and consultancy centres, to assist them become commercially viable capacity-building providers, with the medium-term view of encouraging other firms to follow.
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## Introduction and background

This report has been developed by the Advisory and Support Group (ASG) for the Indonesia-Australia Partnership on Food Security in the Red Meat and Cattle Sector (the Partnership). The report details the findings of an impact evaluation of the Indonesia Australia Commercial Cattle Breeding Program (IACCB).

The IACCB program started on 5 February 2016 and will end on 5 February 2021. IACCB has been funded by the Partnership since its inception. Its implementation was guided by a Scope of Services that outlined key program tasks, outputs and outcomes. The project design required three breeding models to be tested:

1. **SISKA:** Integrated oil palm - cattle production, where cattle are rotationally grazed in an oil palm plantation.
2. **Open Grazing:** where cattle graze in broad acre open grassland.
3. **Cut-and-Carry:** where smallholder farmers manage cattle in a cattle yard and supply green fodder and agricultural by-products for feed.

One partner adapted the SISKA model to accommodate a limited land area. This model, known as **Semi-breedlot/semi-SISKA**, entails cattle grazing in a palm oil plantation for around 6 months, prior to being placed in a breedlot at pre-calving and up to weaning and re-conception.

The four models were not new but were yet to be conclusively tested in an Indonesian commercial setting. Over the first six months of the program the IACCB team sourced and selected eight private sector partners across six provinces.<sup>1</sup> All but one of these partners has continued their cattle breeding operations to date. Potential partners were evaluated for their staff and site capacities (actual and potential) to effectively manage a herd of Brahman Cross Cattle, maintain cattle welfare and achieve commercial success.

IACCB aimed to provide tailored technical support<sup>2</sup> to each selected partner, so that their breeding operations had a high probability of achieving commercial success. It also provided between 20 and 330 Brahman Cross cattle to each partner, with numbers dependent on their carrying capacity and infrastructure<sup>3</sup>. The program retained ownership of the cattle until partners were deemed able to independently manage their commercial cattle breeding enterprises and maintain cattle welfare.

The IACCB Theory of Change (Figure 1) summarises the expectations and Key Performance Indicators (KPIs) behind the achievement of the IACCB goal: **a competitive beef cattle breeding industry in Indonesia.**

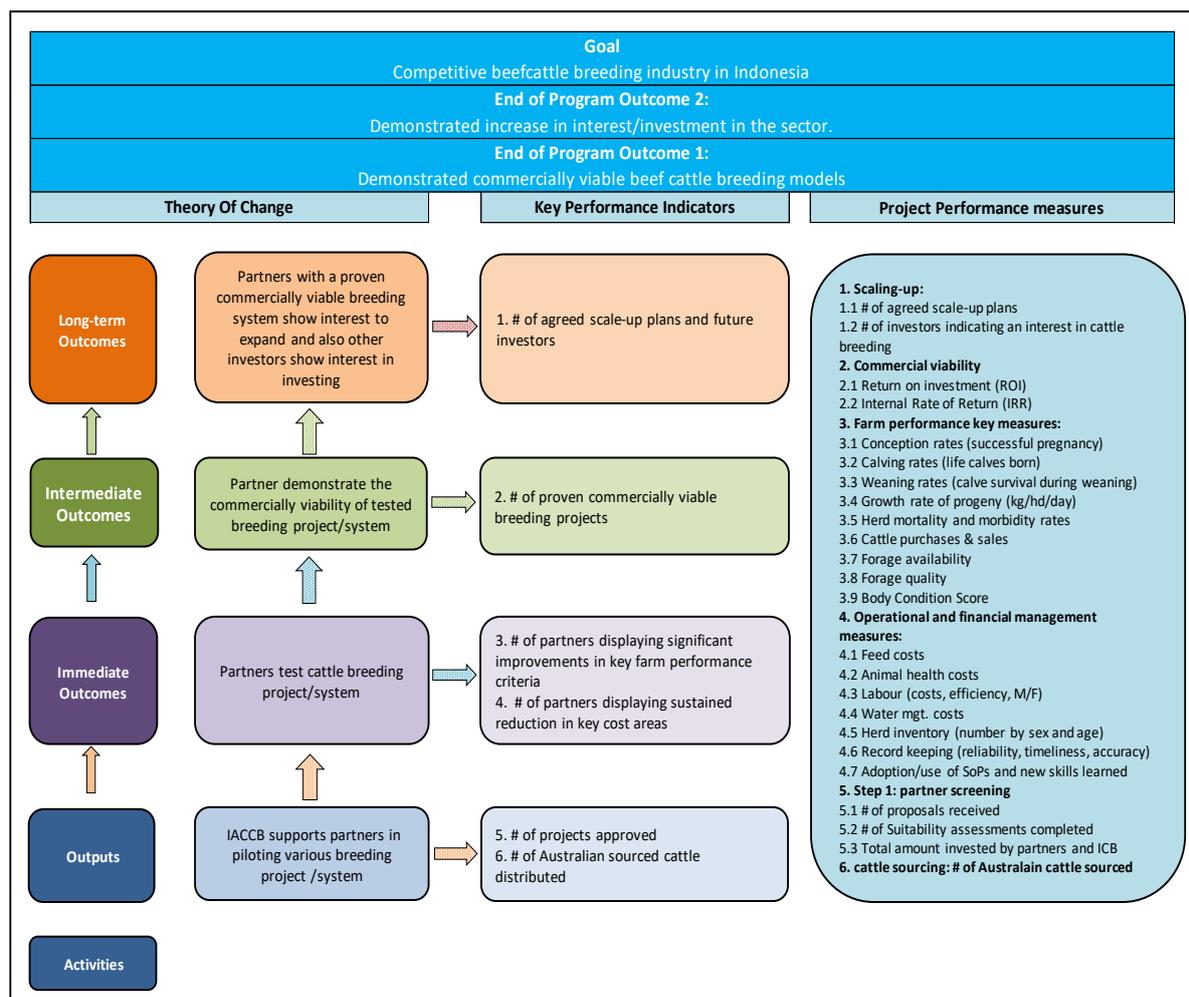
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<sup>1</sup> Nusa Tenggara Barat (NTB), South and Central Kalimantan, Bengkulu, East Java and Lampung. One partner in NTB partner did not proceed and in 2018 another smallholder partner, P4S in central Kalimantan, was selected.

<sup>2</sup> In cattle health, management, breeding, marketing and finance by expatriate and local advisers.

<sup>3</sup> Such as cattle crushes and digital cattle weigh scales that were essential for data collection and productivity monitoring

**Figure 1: IACCB Theory of Change**



In 2019, the program was extended for an additional two years beyond its original three-year timeframe. The objectives for the final two years of the program were to:

1. Conclusively determine the commercial viability of three cattle breeding models
2. Promote the successful models to industry and government stakeholders and inform them of the potential of, and barriers to, industry growth

### 1.1 Evaluation purpose

The evaluation was designed to assess the impact of IACCB after five years of implementation. It was guided by the following key evaluation questions, which are drawn from the IACCB Theory of Change. Key evaluation questions guided data collection, analysis and reporting.

1. How efficient and effective was IACCB's implementation approach? Were the implementation arrangements appropriate and proportionate to the outcomes sought?
2. To what extent has IACCB demonstrated the commercial viability of breeding models?
3. To what extent have the program's monitoring, evaluation and communications arrangements been effective in reporting achievements, progress and in supporting achievement of the program goals?
4. To what extent has IACCB contributed to a demonstrated interest and investment in the cattle breeding sector?

5. To what extent do IACCB outcomes align with the five objectives of the Partnership?
6. What have been the lessons learned and what recommendations would improve the sustainability of IACCB's impact, including policy recommendations and alignment with other government programs?

## 1.2 Methodology

An Evaluation Plan was prepared to guide the evaluation. Evaluation methods employed were a document review; semi-structured interviews with a range of stakeholders; focus group discussions; secondary research; and data analysis. The list of documents provided and reviewed is provided in Annex 1.

Key informants were interviewed in November and December 2020, and included program sponsors (DFAT and DAWE), program managers, program partners, industry association leaders, industry members, investment reference group members, program advisers, industry participants and technical advisers. The list of interviewed stakeholders is provided in Annex 2.

The potential for positive bias from partners and the IACCB team was mitigated by triangulating data from other respondents and document reviews.

## 2 Evaluation Findings

### 2.1 How efficient and effective was IACCB's implementation approach?

IACCB provided high quality, comprehensive support to its partners, and accordingly built collaborative partnerships with them. These factors were instrumental in resolving technical issues and achieving productivity and commercial targets. By retaining ownership of cattle until commercial viability was determined and continuously assessing performance, IACCB was able to support continuous improvements in productivity and commercial results.

#### 2.1.1 Staffing

The strong program results are largely due to the appropriate technical skills of the IACCB team. Program staffing was fit for partner and program needs. For its first three years IACCB was led by an expatriate Indonesian-based feedlot executive with decades of Indonesian commercial experience, who possessed the technical and commercial knowledge and broad industry networks required to select appropriate partners and to establish the eight pilot projects. For its final two years, IACCB was led by a government and community engagement specialist who also had long term Indonesian experience and very strong government relationship building and program promotion skills. These contributed to building important government and private sector relationships in the program's final two years. In addition to the program leaders, program advisers were technically competent and supported partners through all phases of the program in areas such as cattle health, finance, pasture development, nutrition, monitoring and evaluation and data analysis and management. In order to improve the effectiveness of the program's staffing, an oil palm expert could have been included, who could have pre-empted many of the challenges associated with the SSKA model (see section 2.4.2 – New investment).

### 2.1.2 Technical support

The technical support IACCB provided to its partners was appropriate and proportionate, and based on the prevailing needs of each partner. This support significantly improved their cattle breeding capacities, driving consistent improvements in commercial outcomes. All partners stated that IACCB had significantly improved their commercial and cattle breeding management skills. All smallholder partners noted that they were transformed from “traditional farmers into commercial operators”.

More targeted support and training to each partner in their first 3 months of operations and the establishment of pastures may have addressed some start up issues, particularly around inadequate feed causing poor cattle body condition scores<sup>4</sup>. However, this would have likely been beyond the capacity of the IACCB team, who had to select partners, start-up projects and source and deliver 2,100 Brahman Cross cattle in the first year of operations.

Although IACCB’s technical support has seen partners’ cattle breeding capacities improve substantially, ongoing external advice is still required, highlighting the need for on-going industry support (see recommendation 15 and 16). This is not surprising considering the technical nature of cattle breeding and the limited experience (3-4 years) of most partners. Only one partner, PT Buana Karya Bhakti (BKB), was confident they could maintain or grow their cattle breeding business without any external support. The other partners were concerned with their ability to solve all future issues. In general, SISKAs partners were more confident in their cattle breeding abilities than smallholder farmers. A common concern amongst smallholders was a difficulty in accessing finance and resolving management challenges. One smallholder farmer, Koperase Produksi Ternak – Maju Sejahtera (KPT-MS), was concerned that it was not ready for the influx of 1,000 cattle under the *Priority 1,000 Cattle Village Husbandry Program (1,000 Villages Program)*<sup>5</sup>.

A serious program risk was that the program could not maintain cattle health and welfare. This risk was effectively managed by providing high quality and timely advice to project partners, particularly by competent and available field staff. IACCB also maintained a continual focus on Body Condition Score which was used as a proxy for animal welfare and productivity. All communications with partners commenced with a discussion of their herd BCS report and all efforts were targeted at maintaining or exceeding the BCS KPI. At interview, all partners highlighted the link between healthy cattle and good commercial outcome. Some smallholder partners may however need support to maintain optimal productivity and animal welfare post IACCB.

### 2.1.3 Timeframe

The program’s five-year timeframe allowed the IACCB team to fully test and modify all breeding models, ensuring their suitability to the Indonesian context. This has maximised their effectiveness and uptake by partners, new investors and government. The program’s timeframe also allowed technical issues to emerge and solutions to be found and documented, creating a high level of confidence in the legitimacy of the program’s outputs. For instance, the IACCB Cattle Health adviser noted that he is now “99% confident in the advice he provides on cattle breeding in Indonesia and PNG” due to IACCB’s comprehensive and robust implementation approach.

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<sup>4</sup> Body condition scores or BCSs are used as a proxy for cattle health and productivity

<sup>5</sup> A program linked to a Presidential Directive that aims to distribute breeders and feeders to 1000 villages.

#### 2.1.4 Skills development

IACCB has helped build the foundations of a cattle breeding skills development sector in Indonesia. Smallholder business management consulting services will be available through Gita Pertiwi, who, together with IACCB, developed an organisational strengthening approach specifically suited to cattle breeding cooperatives. Gita Pertiwi are now partnering with Lampung District Livestock Offices to support the implementation of the Indonesian Government Ministry of Agriculture (MoA)'s 1,000 Villages Program. IACCB also supported three smallholder partners to develop cattle breeding curricula, two of which achieved government supported P4S training centre status<sup>6</sup>, and one SSKA partner, BKB, developed a SSKA 'Centre of Excellence' training centre. BKB has signed a Memorandum of Understanding with the University of Brawijaya (Malang, East Java) to be a training provider and will train smallholder farmers through the Resource Development Program of the Palm Oil Fund Management Agency.<sup>7</sup> The training of university students in IACCB models could, in time, produce a cadre of influential industry advocates. This nascent skills development sector could potentially be scaled up with the view to countering the current industry skills deficit (see Skills Development in Recommendations).

#### 2.1.5 Government engagement

In the final two years of the program, IACCB significantly strengthened the relationship with the MoA by providing practical support and information for the development of their cattle breeding plans and policies. IACCB also regularly brought industry and government stakeholders together, which resolved technical issues and increased interest in cattle breeding and new plans for investment (see section 2.4.2 – Government interest). Indonesia's Agency for the Assessment and Application of Technology (BPPT)<sup>8</sup> conducted research on IACCB partner farms, which also brought industry closer to government and improved the overall quality and credibility of the IACCB-commissioned research findings.

The program attracted attention from all levels of Government from national to local, and at a Ministerial level, that generated additional support for partner and program goals. At the local level, several smallholder partners received funds from local governments to improve their cattle breeding business. After a request from one partner, one local government improved roads on which cattle were transported generating wider economic benefits.

At the local government level, IACCB could have engaged with local governments earlier (i.e. at project start up), with the view to potentially leveraging government funding or other support. The final two years of IACCB did however see increased engagement with and interest from local governments, including in the use of retired state-owned enterprise mining leases for cattle breeding using the Open Grazing model. It is also noted that it would have been challenging to generate local government interest in cattle breeding prior to the commercial success of the models.

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<sup>6</sup> Pusat Pelatihan Pertanian dan Perdesaan – MoA accredited agriculture and rural development training Centers that receive government support and that train other farmer cooperatives

<sup>7</sup> Badan Pengelola Dana Perkebunan Kelapa Sawit which has a A\$1.5 billion development funds.

<sup>8</sup> BPPT is a non-ministerial government agency under the coordination of the Ministry for Research and Technology

### 2.1.6 Program implementation weaknesses

Although four breeding models were tested conclusively, IACCB missed an opportunity to test a feedlot / smallholder cooperative model. Feedlot owners were disappointed that six proposals to test this model were not accepted at the project's start. This model may have formed an important component of industry scale up, considering the 20:1 regulation<sup>9</sup>. However, it is noted that at the time of proposal submissions the regulation was not in place and the program design and the client required a focus on large commercial firms, not smallholders.

While IACCB proved that breeding Brahman Cross cattle in Indonesia is commercially viable and profitable under good management, several respondents noted that this result would have been significantly more impactful if it was compared against the commercial and productivity attributes of local cattle. The IACCB program design did however stipulate the use of Brahman Cross cattle and it is unlikely the program would have had sufficient budget and capacity to test the models with both breeds.

## 2.2 To what extent has IACCB demonstrated the commercial viability of breeding models?

### 2.2.1 Commercial Viability Assessment

The commercial viability of the breeding models was tested through assessing productivity and financial data from each partner and for each cattle breeding model, compiled over four years<sup>10</sup>. Partners were able to use productivity measurements, cost-of-gain trials, and Commercial Viability Assessment (CVA) results to make critical commercial decisions, for example, how to reduce feed costs or whether to retain or sell cattle. In addition to CVAs, regular Project Performance Assessments (PPAs) produced judgments on partners' progress towards commercial viability and sustainability.

The method for calculating commercial viability using the CVA process was considered accurate and credible by all respondents. The CVA made judgments on partners' commercial sustainability, which triggered the handover of cattle. While commercial sustainability can never be guaranteed and must be maintained over time, the CVA and PPA processes were a very effective management tool that encouraged IACCB and partners to focus efforts and resources on areas of greatest need. For example, PT Superindo Utama Jaya (SUJ), the Siska-Breedlot partner in Lampung, failed its first CVA, as the average daily weight gain (ADG) for its weaned calves and growers was too low, which resulted in insufficient cash flow and projected Internal Rate of Return (IRR).<sup>11</sup> SUJ and IACCB decided to implement cost-of-gain trials, using different feed compositions, that ultimately saw the required increase in ADGs at a competitive price.

### 2.2.2 Financial software tools

IACCB developed a range of software tools, such as CALFIN and CALPROF, which allowed partners, investors and banks to confidently calculate their flow projections, payback period and profitability.

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<sup>9</sup> A regulation that requires 5% of an import quota to comprise breeders. The regulation is currently on hold due to COVID-19. The feedlot industry is negotiating with the MoA to bring the ratio down to 3% for the capacity of the feedlot.

<sup>10</sup> Partner selection and cattle distribution took 6 months and partner projects were implemented 2 – 4 years.

<sup>11</sup> An interest rate that can help calculate how appealing an investment might be based on its current value and a critical measure for investors.

CALFIN generates the IRR and net present value (NPV) of investments and additional data that allows investors to make informed investment decisions. Investors are now using CALFIN to calculate the impact of various investment strategies on profitability. Banks and investors noted that the tools significantly reduced their workload as they can now complete financial projections in approximately one hour.

It was noted that the cost of IACCB's international advisers were not included in partner commercial viability assessments. It is acknowledged that IACCB partners are 'pioneers' testing new models who needed to use significant adviser inputs to resolve emergent issues. However, new investors will also need considerable advisory inputs, particularly in the first few years of their business.

### 2.2.3 Commercial viability outcomes

IACCB conclusively assessed the commercial viability of the four breeding models.

The SISKA model was found to be commercially viable in well-managed enterprises that maintain full integration of plantation and cattle operations. SISKA, implemented by large palm oil operators, with sufficient land and capital, offers the best opportunity to drive industry growth.

The Small-Holder Cut-and-Carry Model delivers high productivity and commercial viability but only if there is consistent professional herd management. Brahman Cross cattle breeding is challenging at a small-holder level especially within communally managed commercial sized enterprises.

The Open-Grazing Model is commercially attractive when sufficient land is available and native pastures have been improved using commercially proven varieties. Commercial viability is dependent on access to pasture seeds and skills to develop and manage improved pastures.

The Semi-Breedlot/SIKSA Model has high operational and feed costs from raising breeding stock semi-continuously in a cattle-yard, making it challenging to sustainably achieve commercial viability.

Through the CVA process IACCB effectively assessed the commercial viability for all eight partners. At the latest CVAs conducted in late 2020, seven of eight partners were found to be commercially sustainable, while the remaining partner (SUJ) was assessed as profitable but having uncertain commercial sustainability. Of the eight private sector partners, KPT MS, which employed the cut-and-carry model, achieved the highest productivity KPIs<sup>12</sup> and had good CVA results, indicating that their cattle breeding operation had the highest level of commercial viability. Their model inspired directors in MoA and was used to design the 1,000 Villages Program. KPT MS is however not typical of smallholder systems in Indonesia. Unlike most smallholder enterprises, KPT MS has committed leadership and commercially oriented members, is well-resourced, and has access to finance and cheap feed. Therefore, caution should be exercised when scaling up the KPT MS model to other parts of Indonesia.

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<sup>12</sup> Key indicators for cattle productivity were body condition score, weaning rate, average daily gain, local feeder production, positive cash flow, internal rate of return and management.

## 2.3 To what extent have the program's monitoring, evaluation and communications arrangements been effective?

### 2.3.1 Monitoring and evaluation

IACCB's monitoring and evaluation (M&E) approach was designed to support decision making, ensure accountability for the use of resources, and capture lessons learned. By monitoring key cattle management indicators<sup>13</sup> at partner sites, the M&E system was able to effectively discover issues, address them, and apply the lessons learned to other partners and the wider program.

IACCB effectively reported achievements and progress through its M&E functions. IACCB's monitored pasture production and a wide range of cattle productivity factors, which were reported upwards<sup>14</sup>. This reporting allowed comparisons to be made between projects and supported program advisors and leaders to develop industry benchmarks. These benchmarks and their associated KPIs now provide cattle breeding managers with targets for planning and improvements, and data for investors to make considered investment decisions. In this way, M&E effectively reported progress, allowing for program partners to improve the effectiveness of their operations.

The program had a full-time M&E officer, who collated and analysed project data provided by partners and who provided advice to partners on herd monitoring and recording. While this was a good approach to M&E, the program would have benefited from the M&E officer conducting regular field visits to monitor performance and conducting interviews with partners on issues such as management approach, challenges, risks, and partnership commitment. This would have provided a deeper assessment of the status of each partnership, which may have assisted decision making, particularly in the first few years of project implementation.

IACCB's overarching goal is to contribute to a competitive beef cattle breeding industry in Indonesia. The program's M&E arrangements contributed to the achievement of this goal by allowing for iterative learning, which helped the program to adjust based on partner needs and accordingly facilitate positive cattle breeding outcomes. For instance, the IACCB team initially used Stockbook, an Australian developed cattle management system, to monitor partners' progress and to be responsive to their needs. Although capturing all appropriate indicators, key informants reported it was a burden and not a good fit for the Indonesian context. Maintaining the system was costly, required training, and it was not easy to keep it up to date. In response to this feedback, IACCB developed and adopted a simpler Excel based system, CALPROS, which was more commensurate with partners' capabilities and much appreciated by the partners. CALPROF, a herd performance software tool, was used for bigger herds.

Another way that IACCB's M&E approach contributed to a competitive beef cattle breeding industry in Indonesia was by thorough and extensive data collection. The scale of IACCB's data set enabled external researchers to conduct meta-data analysis on issues of importance, such as calf mortality, without the need to conduct additional research. For example, IACCB has records for the birth of over 2,500 calves up to weaning stage and 250+ calves that died and the causes of their death. To develop mortality reduction strategies researchers from the Katherine Research Institute - Northern

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<sup>13</sup> BCS, weaning rate, average daily weight gain, local feeder production, positive cash flow, internal rate of return, social benefit, security and management

<sup>14</sup> Key productivity indicators include: Body condition score, calving and weaning rate, average daily gain, and local feeder production cost which determine cash flow and ultimately the internal rate of return.

Territory compared climatic and other factors and their relationship to calf death. Historical data was also used to determine the impact of cattle grazing on palm productivity, known as fresh fruit bunch yield. IACCB's data set remains a highly valuable resource for both researchers and industry. This data will continue to strengthen knowledge and therefore more informed decision-making regarding breeding beef cattle in Indonesia.

### **2.3.2 Communications**

Communications with partners, and communications about the program to external stakeholders, were effective in reporting achievements, progress and supporting the achievement of program goals.

IACCB communications with partners assisted them in the timely resolution of technical issues, which progressed business improvements. All partners gave positive feedback on communications with all saying that field staff were responsive to their needs and were always available to help resolve issues and to help drive productivity and management improvements. Several respondents noted that good communications were maintained via regular field officer visits to project sites supplemented by online communications and video calls. Online communications were particularly useful during the COVID-19 lock downs when travel was not possible.

External communications effectively reported program achievements and progress to a wider audience. Through workshops, seminars and meetings, the IACCB team was able to reach a large audience of government and industry representatives, informing them of the achievements of the program and the benefits of cattle breeding. These face-to-face and online events have led to increased interest from all stakeholders, particularly government (see sections 2.4.1 and 2.4.2). Additionally, IACCB's website, quarterly newsletter and online engagement have been useful tools for communicating progress, achievements and outcomes to a wide audience.

## **2.4 To what extent has IACCB contributed to a demonstrated interest and investment in the cattle breeding sector?**

The program made a concerted effort to work with government and the private sector to stimulate interest in cattle breeding, based on the success of the models tested. The expectation was that this would increase interest in cattle breeding and would, in the longer term, lead to the Indonesian government promoting a favourable policy environment for investment. An expected long-term outcome is that the private sector and the Indonesian government will invest in cattle breeding based on the lessons learned and commercial approaches tested by IACCB. It is also expected that the government will continue to support cooperatives with training and local technical advice using the approaches demonstrated as commercially viable by IACCB. For SSKA it is expected that some oil palm companies will take up the model to exploit the commercial opportunities identified by IACCB.

### **2.4.1 Actions taken to garner interest and investment in cattle breeding**

To generate interest IACCB has run seminars and workshops, inviting industry and government partners. IACCB representatives have participated in government webinars and workshops and have distributed material through the program's website. Throughout the program, IACCB ran training workshops, encouraging industry players and government officials to attend. IACCB has also provided information to Indonesia's Ministry of National Development Planning (BAPPENAS) for policy development, and 15 BAPPENAS staff attended training on IACCB's management tools, CALPROS and CALFIN. Some examples of workshops conducted by IACCB include:

- 2017-2020: regular SISKAs and Smallholder workshops
- 2018: Symposium on cattle breeding
- 2019: Integrated Cattle and Oil Palm Production Conference (ICOP) (co-organised with BPPT)
- Numerous presentations and webinars to industry partners, including 12 webinars in 2020, one co-hosted with MoA
- 2019 and 2020: Outreach meetings with government and industry

COVID-19 shifted IACCB promotions to online webinars which significantly expanded their reach. Industry partners from Medan to Papua and more than 1,500 government staff (38% of 4,000 attendees) participated.

Along with running seminars, workshops and meetings, IACCB has developed products for current partners and future investors to use to support their investment in cattle breeding. IACCB has also developed prospectuses, technical and commercial papers and investment tools, and a cattle breeding manual to guide investment.

#### **2.4.2 Evidence of interest and investment in cattle breeding**

Through these activities, IACCB has contributed to an increased interest and investment in the cattle breeding sector in Indonesia. Notably, IACCB has garnered interest from the Government of Indonesia (GoI), promoted investment from partners, and provided guidance to prospective investors, some of whom have invested. However, reluctance to invest in cattle breeding remains common, particularly amongst oil palm operators.

##### Government interest

IACCB's work in promoting its cattle breeding models has garnered significant interest from the Indonesian government. A key indicator of this interest is MoA's Directorate General of Livestock and Animal Health Services request that the Partnership support its 1000 Villages Program. Furthermore, both national government and local government officials have visited many of the partner sites, including one ministerial visit. Local government staff now have greater confidence in the smallholder model, a message conveyed to the MoA on several occasions.

Indonesian government ministries have sought information from IACCB, and the program has supported their cattle breeding policies and plans. IACCB contributed to a policy-brief on SISKAs, developed by BAPPENAS Directorate of Food and Agriculture, and supported the Directorate-General Livestock and Animal Health to model SISKAs for inclusion in the 2020-2024 National Medium-Term Development Plan.<sup>15</sup> The Coordinating Ministry of Economic Affairs, Ministry of Cooperatives and SMEs and BAPPENAS have all requested and received training in IACCB investment tools. MoA provincial technical agencies are using BKB's SISKAs Training Centre in South Kalimantan as a working example for interested parties. MoA has used IACCB's partner representatives to present at their seminars, citing them as good models for cattle breeding.

##### Partner investment

To date, IACCB partners have invested around \$4.5 million in their cattle breeding businesses. Smallholder partners report that the program is having a multiplier effect with one cooperative identifying four other farmer groups which are adopting the IACCB model. A women's cooperative,

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<sup>15</sup> Presidential Regulation (Perpres) Number 18 of 2020 signed on 17 January 2020

which sent two people to KPT to learn about IACCB approaches, will now expand their smallholder business, comprising 31 cattle, after only 1.5 years.

IACCB has also promoted ongoing investment from its partner enterprises. Although one SISKAs partner ceased palm oil and cattle operations in 2019, each of the seven remaining partners had developed, with support from IACCB, enterprise development plans. Five of these plans are aimed at expanding their herds, while the remaining two are focused on sustainably maintaining their current numbers to suit their capacity. This indicates partners' confidence in the models and ability to manage their businesses without IACCB support.

### New investment

While there is some evidence of new investment in cattle breeding catalysed by IACCB, reluctance from new investors remains common. To stimulate investment, ongoing promotion of IACCB results will be required, along with a more conducive regulatory environment for cattle breeding investors.

20 companies have approached IACCB expressing their interest in cattle breeding and six of those were provided with technical and financial modelling assistance from IACCB. Five have entered new cattle breeding businesses, and one, a sister company of Sinarmas Mining that already breeds cattle, has benefitted from the exchange of data and investment tools. To date, these new enterprises have invested \$1.65m in new cattle breeding operations.

ASTRA has invested in its own SISKAs trial but are currently downsizing their herd. This has resulted in the industry doubting the viability of the SISKAs model. One respondent estimated that you would need 10-15 firms to implement SISKAs before it will gain momentum. Currently there is very limited investment outside of the IACCB partners.

To maximise the attractiveness of the SISKAs model, all financial benefits must be included in profitability calculations, including reduced fertiliser and weed control costs and potential increased Fresh Fruit Bunch (FFB) productivity. BPPT's two-year study (2018-2020) on the impact of integrated cattle grazing and oil palm production found that at one of the study sites (BKB), FFB yield increased by 4% per year. If this yield increase could be replicated in following years, and is backed up by results from reputable studies, it could be a significant motivator for hesitant investors.

Although IACCB worked to address industry concerns, including about Ganoderma and soil compaction, reluctance amongst the industry to invest has remained. A significant barrier to investment is industry's concern that SISKAs, unlike oil palm management, requires 24/7 oversight and that free-range cattle would introduce new complications, negatively affecting the growth and productivity of oil palm.

Investing in the cattle business is also seen as high risk. Currently the IRR in the palm oil business is around 18-19% whereas in well-managed SISKAs enterprises it was projected by IACCB to be around 13% at year 10. The current economic environment is also not conducive. The price of palm oil is high at US\$8/tonne. The cap on market beef prices and the importation of Indian buffalo meat also severely limits the profitability of cattle breeding.

Palm oil operators have very fixed views about cattle under palm and it will take a significant effort to change their mind. The feedlot industry also sees cattle breeding as a burden, reducing their profitability, and requiring additional land. Unless they can get access to free land for cattle raising, they are unlikely to be able to sustain a cattle breeding business.

## 2.5 To what extent do the IACCB outcomes align with the five objectives of the Partnership?

The contributions IACCB has made to the strategic objectives of the Partnership are significant given the level of investment. While some of these benefits can be seen already, many of the benefits will accrue in the longer term. In particular, the program has contributed to the following Partnership objectives.

### 2.5.1 Increasing domestic and foreign investment in the red meat and cattle supply chains

As explained above, IACCB has supported increased domestic investment in cattle breeding operations, notwithstanding the reluctance of much of the Indonesian palm oil and feedlot industry to invest. Seven of the eight original partners will continue investing in their cattle-breeding operations beyond the life of the program, with five partners scaling-up their operations. In total, partners have invested AUD\$5.75 million in their businesses. Additionally, IACCB has supported an additional five new investors to begin new cattle breeding businesses, which have invested a total of AUD\$1.65 million to date.

### 2.5.2 Increasing Indonesia's cattle population to meet local demand and food security targets

Through the provision of Brahman Cross Cattle to its partners, IACCB has directly increased the cattle herd by 2,500 head since the start of the project. This herd is projected to grow by a further 12,000 head by 2027. Furthermore, targeted technical support from IACCB for the GoI's Medium-Term Development program (RPJM) and the 1000 Cattle Villages program should substantially increase cattle numbers and government and private sector investments. By directly increasing herd numbers and stimulating investment, IACCB has also contributed indirectly to the Partnership goal of improving the security, prosperity and productivity of the Indonesian and Australian red meat and cattle industries. The likelihood of future investment is however highly dependent on an enabling regulatory environment and ongoing promotion beyond the life of IACCB.

### 2.5.3 Building a trusted relationship between Australian and Indonesian industries and governments

IACCB has contributed to improved relations and trust between the GoI and the Australian Government, as a result of IACCB directly supporting MoA's breeding programs. MoA now see IACCB as an effective Partnership program that supports GoI goals.

## 2.6 What have been the lessons learned?

**Applied research operating in real commercial settings was instrumental in conclusively testing the commercial viability of the models and generating broad industry and government acceptance of program results.** IACCB's research approach was strongly focused on production of immediately usable information for Indonesia's commercial cattle breeding sector. It achieved this by working directly with industry in a practical and applied manner. Industry-linked programs often work with larger sample sizes but with less complex and/or informal treatments. If these constraints are effectively managed it is possible to generate publishable research outputs.

**The initial IACCB program was unrealistically brief at three years duration.** Agricultural research is time-consuming and rarely finalised in one or two seasons. The program extension of two years allowed IACCB to complete a critical amount of research and commence the process of promoting its findings. The program's five-year time period also allowed the IACCB team to fully test and modify the four breeding models, ensuring their suitability to the Indonesian context and maximising their effectiveness. This resulted in a high level of confidence in the technical legitimacy of all program outputs and their uptake by both industry and government.

**Collaboration with Indonesian government research agencies was highly beneficial.** It provided a three-way linkage between government, industry and IACCB that provided benefits to all. For example, collaboration with BPPT to conduct research on partner sites brought industry closer to government and improved the overall quality and credibility of the research results. It also generated interest from MoA research institutes, driving the uptake of research results in government circles.

**IACCB's continuous and strong focus on commercial viability was key to success.** The program closely tracked expenditure and revenue so that accurate financial information was available. This financial information underpinned business projections through applied spreadsheet models so that different strategies for potential investments could be assessed on their financial viability. This approach ultimately stimulated interest and investment in a relatively unknown sector.

**Data management and analysis drove commercial improvements.** IACCB aimed to encourage investment in the Indonesian cattle breeding sector by robustly testing the commercial viability of its three breeding models. It did this by providing targeted technical assistance to projects that drove herd productivity and cost efficiency, and by the maintenance of robust data sets, accurate record keeping, and data analysis. As a result, project and IACCB staff were able to analyse progress and make considered decisions to resolve what were often complex challenges, in a timely and effective manner. This process of identifying and solving cattle breeding issues through data analysis also significantly improved ranch managers and stockmen/women capacities over the life of each project.

**Cattle and co-investment provided substantial leverage.** The program design required partnering with large and financially strong private sector companies. The key challenge was how to effectively engage with firms who had established operations and were used to operating very independently. The attraction of being rewarded with cattle at the end of the project, if commercial viability and cattle welfare was achieved, and the possibility of cattle being removed if not, proved very effective. This, together with the high rates of partner investments in each project, provided leverage for the IACCB team to engage intensely with staff and workers, encouraged partner management to adequately resource the project (e.g. staff, feed, infrastructure) and to provide access to all relevant data.

**Smallholder farmer cooperatives should start with smaller herds.** The need to demonstrate a commercial size herd and meet the contractual cattle distribution target<sup>16</sup> resulted in most smallholder partners receiving around 100 cattle, which overwhelmed them. A maximum of 50 cattle is more suitable, with final numbers dependant on starting capability.

**Peer to peer learning was very effective.** Peer learning workshops<sup>17</sup>, where partner staff from strong performing projects presented to peers from other sites implementing the same breeding model,

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<sup>16</sup> IACCB was contractually required to distribute 2,100 Brahman Cross cattle to partners.

<sup>17</sup> IACCB separated partners in two groups (smallholders and SSKA) and ran 6-monthly separate workshops with each.

provided an ideal environment to discuss practical issues, to learn, and to develop professional networks to be drawn on as required. Peer learning networks should be a component of any efforts to establish a nascent Indonesian cattle breeding industry.

**The provision of remote technical assistance was feasible, efficient and cost effective.** For example, the provision of health advice via WHATSAPP during the COVID-19 pandemic by the program's Australian based veterinarian was highly effective and significantly more cost effective than visiting each site. Remote technical assistance is however most applicable where a basic level of skills has already been established that ensures the remote advice will be implemented as instructed.

**On-line promotional activities were highly inclusive and delivered strong value-for-money outcomes.** The COVID-19 pandemic required IACCB to interact with industry, government officials and other interested parties through a series of on-line webinars. This provided an opportunity to reach and receive feedback on IACCB findings from a diverse group of interested parties from all over Indonesia. The substantially reduced barriers to participation (e.g. no travel or accommodation costs) significantly increased the diversity and number of webinar participants, with female participation significantly higher than traditional cattle sector seminars. The webinars also significantly reduced the costs of promotion (no venue hire, travel and accommodation costs). Webinars will however not deliver the same level of industry networking opportunities presented by traditional face to face meetings.

**Project Briefs and Suitability Assessments were key to success.** The detailed and comprehensive nature of Suitability Assessments, conducted by a technically competent IACCB team, was key to the selection of appropriate partners. Project Briefs, jointly developed with partners, provided a detailed blueprint for delivery. Cattle breeding in Indonesia is a complex and high-risk venture. Suitability assessment and project briefs provided the minimal due diligence required for success.

**Regular Project Performance Assessments and commercially focussed KPIs drove performance improvements.** From each project commencement nine commercial targets (KPIs) were established, and thereafter consistently and collaboratively monitored. These KPIs facilitated practical and targeted discussions, as they covered the key requirements for commercial viability and were highly relevant to each partner. KPIs also provided a very clear framework to gauge commercial progress and evidence to justify decisions and investments. The Project Performance Assessment process, conducted quarterly, prior to the CVAs, and six-monthly after the CVAs, allowed partners and IACCB staff to reflect deeply on key issues and their resolution, and project successes, both of which motivated partners to continue to invest and innovate.

**The cattle breeding models are "Commercially Viable"** although with relatively small profit margins and results are dependent on continuous professional cattle management. SISKAs, implemented by large palm oil operators with sufficient land and capital offers the best opportunity to drive industry growth. There are and always will be challenges to maintaining the commercial viability for all models, most notably around various technical factors influencing productivity.

**Smallholders need access to high quality support.** IACCB has shown that smallholders, with substantial support, can manage commercial scale herds. However, farmer cooperative capacities, including organizational management and staff skills, feed supply, cash flow, and access to funds, service providers and vaccines, will need to be heavily scrutinized and be deemed adequate prior to commencing projects. Cattle herd numbers also need to match smallholder resources. On-going technical support will be required for smallholder groups to achieve long term success.

**Australian Brahman cattle can breed in Indonesia** - Prior to IACCB there was conjecture, particularly from smallholder farmers and some Indonesian government staff, that Australian Brahman Cross cattle are not successful breeders in Indonesia. Indeed, many past programs that granted Australian Brahman Cross cattle to smallholders have failed, evidenced by the fact that the cattle did not return to pregnancy after their first calf. IACCB projects have been able to achieve very strong average calving intervals, for some smallholders reaching between 13 and 14 months<sup>18</sup>. Within GoI circles, both at national and sub-national level, this news was very positively received. IACCB has provided evidence that with good management Australian Brahman Cross cattle can be bred in Indonesia with positive commercial outcomes.

**Integrating cattle and palm management is the key to SSKA success** - Oil-palm plantations employ large numbers of staff and workers who work within rigid structures and standard operating procedures that have been fine-tuned over decades. Their rigidity presents a key challenge to cattle breeding, which requires changes to daily palm management routines and processes. Plantation management commitment to integrating cattle breeding and palm-oil management was the greatest factor determining the success of SSKA projects. Integrated systems could most effectively achieve synergies between the two business lines (e.g. decreased fertiliser and herbicide use; increases in palm productivity / fresh fruit bunch yields).

**Adequate preparations are essential prior to cattle arriving** - The relatively short time frame of IACCB and the initial need to deliver results within 3 years resulted in the premature placement of cattle on project sites. Ideally, each selected partner would have had at least six months to prepare the business prior to the arrival of cattle. Critical preparatory steps include pasture development; staff and management training; identifying sources of feed supplements and ration formulation; establishment of animal health kits including antibiotics, vaccines and other veterinary essentials; provision of access to professional veterinary services for more demanding animal health issues; and, for SSKA models, modification of standard operating procedures so that oil-palm and cattle processes are fully integrated.

## 2.7 Beneficial Unintended Outcomes

The evaluation notes several beneficial unintended outcomes.<sup>19</sup>

IACCB delivered significant community benefits via direct employment and the generation of downstream opportunities such as in meat processing and access to manure, an important resource in rural communities. At program closure IACCB partners were employing 125 staff (46 permanent and 79 casual) including 46 women (37%). Partner community engagement and local economic outcomes have improved as a result.

IACCB increased employment opportunities for women. IACCB worked with its partners to assess the opportunities and constraints for the inclusion of women and people with disabilities. Support was then provided to actively encourage women's employment, particularly in tasks associated with herd health, calf management and administration. As a result, local women gained employment in every IACCB project, in pasture development (casual roles in nursery maintenance and pasture propagation) and in permanent animal health and administration roles. As the industry grows employment opportunities for women will increase, in areas such as veterinary and feed nutrition services. IACCB's also assisted the 5,000-member majority-women, women-led cooperative *Kooperasi Wanita Pusaka Pertiwi (KWPP)* in Medan to develop a cattle breeding pilot, to be used as a demonstration and training site for women farmer groups. KWPP's Cut-and-Carry model provides

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<sup>18</sup> Average calving intervals for local cattle are 18 to 24 months

<sup>19</sup> Not expected as per the Theory of Change

opportunities for women to increase their income from cattle breeding or from growing cattle feed on idle land.

### 3 Conclusions

IACCB's investment in high-quality applied research, conducted in collaboration with commercial firms and farmer organisations, delivered credible results with long-term relevance for government and industry. The commercial viability of the four cattle breeding models in Indonesia was conclusively determined and IACCB results and products have been extensively promoted to both government and the private sector. This has raised the profile of IACCB and has generated a positive government response.

In all projects, IACCB met or exceeded partner expectations from the outset. This served to establish credibility and trust, which thereafter allowed a highly collaborative and innovative approach to project delivery, essential to project success. This could not have occurred without highly competent Team Leaders with extensive industry experience and networks, advisers and field staff who had extensive Brahman Cross cattle management expertise, years of Indonesian cattle industry experience and established industry networks. This highly competent team provided timely access to goods and services (e.g. trucking, veterinary care, seed) and allowed the collaborative development of feasible solutions to the many cattle breeding challenges that arose.

IACCB has delivered very good value for money. Compared to its budget of AUD \$9.1 million, IACCB has generated \$7.15 million worth of investment from partners and new investors. There is now good momentum for leveraging IACCB outcomes through government plans and programs (e.g. RPJM, 1000 Villages), which should result in significant investment in cattle breeding. Government and industry have access to IACCB investment tools, reports, data and technical manuals with which to make investment decisions and to guide the implementation of the IACCB models.

IACCB has shown that SISKA, when implemented by large palm oil operators that have sufficient land and capital, offers the best opportunity to drive industry growth. However, despite the significant interest in cattle breeding generated through IACCB, the program is not generating a lot of new private sector investment outside of the current partnerships. The main reason is the perceived high risk versus low return. The IRR<sup>20</sup> of between 10 - 14% from SISKA operations will likely not be enough to attract new investment from plantations owners used to 18-19%, and who are, in general, sceptical of the SISKA model.

There are few successful large-scale cattle breeding operations that could motivate other investors. Industry champions for SISKA are required before the model will be more widely adopted. The industry also needs capable advisers and firms with deep commercial cattle breeding knowledge, particularly when investors are considering or planning investments and a more conducive business enabling environment.

Some key informants feel that given more time there will be some investment. A lack of investment in 2020 may be partly attributable to the current recession brought about by the COVID-19 pandemic. It is clear the program needs ongoing promotion, through both government and industry champions, to attract investors, combined with a clear understanding of the benefits to the oil palm industry

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<sup>20</sup> Internal rate of return before interest, taxes, depreciation, and amortization

through an integrated model. Industry bodies (GAPUSPINDO; ISPI; GAPKI) are ideally placed to lead the promotions as they have the commercial and political incentive to support or influence government breeding policies.

## 4 Recommendations

The following recommendations are aimed at (1) leveraging IACCB strengths, namely its well-regarded products, strong industry and government networks, and its credibility and visibility within industry and government, (2) maximising the uptake and sustainability of the IACCB outputs, and (3) overcoming industry resistance to investment. Lessons learned, in section 2.6, should be taken into consideration in the design of any future program.

### 4.1.1 Communication and promotion

- Source a well-respected oil palm industry member to operate as a Siska advocate/champion. The advocate will liaise with the Indonesian Palm Oil Association (GAPKI), the Indonesian Oil Palm Research Institute and the oil palm industry to:
  - a) Understand Siska barriers to investment, from an oil palm industry perspective, the current challenges, and how some of these issues could be overcome.
  - b) Promote policy dialogues between the oil palm industry and government.
  - c) Develop and coordinate the implementation of a Promotional Strategy that targets key industry concerns and promotes the Siska model more intensively in the palm oil industry. Promotions should focus on the benefits to palm oil operations, including increases in fresh fruit bunch yield from Siska.
  - d) Identify industry champions and or associations who would be willing to assist in and or drive a promotions campaign.
  - e) Collaborate with the Sustainable Palm Oil (SPO) Initiative<sup>21</sup> on the implementation of the Presidential Instruction Number 6/2019 on National Action Plan on Sustainable Palm Oil 2019-2024.

### 4.1.2 Supporting GoI's cattle breeding policies and plans

- Collaboratively design, with the MoA, a program that supports MoA cattle breeding policies and plans. The program should aim to further strengthen MoA engagement through providing support to Siska/smallholder development plans. The program should support coordination between national, provincial and local government levels, and with all relevant ministries<sup>22</sup>, while supporting the expansion of Siska and Open Grazing models without promoting 'must do' Siska regulation.

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<sup>21</sup> An alliance between GoI, the United Nations Development Programme (UNDP), the private sector and other non-government partners that aims to address key challenges in Indonesia's palm oil sector such as deforestation and improving the livelihoods of smallholder farmers

<sup>22</sup> Ministry of Trade, Coordinating Ministry for Economic Affairs, Ministry of Cooperatives and SMEs, Ministry of Villages

- Collaboratively develop a program of Smallholder/Cut and Carry support for the 1,000 Villages program, drawing on experience, advisers and products from IACCB, ISPI, MoA, and other relevant agencies at the central, provincial and local levels. The aim should be to develop a program that can be quickly designed and rolled out and that has a key focus on maintaining animal welfare from which other productivity and commercial outcomes will follow.
- Continue to support Gol's key programs for food security in the red meat sector within the 2020-2024 RPJMN. These could include increasing the cattle population through SISKA expansion (commercial and smallholder SISKA), the Central Kalimantan Food Estate, and the 1,000 Villages Program.
- Conduct a regulatory review of cattle breeding related policy and regulations and develop recommendations that improve their effectiveness and coherence. The review should be directly aimed at supporting the achievement of the Gol's cattle breeding policies and plans, be conducted by a reputable Indonesian consultant/firm, and assess:
  - a) Access to finance constraints and opportunities
  - b) Financial incentives and business enabling measures, such as permits for cattle breeding, low interest rates and tax breaks
  - c) Regulatory barriers for the import of vaccines and pasture seeds

#### **4.1.3 Skills development**

- Develop an Industry Skills Development Strategy/ies focused on IACCB cattle breeding models with industry and vocational training institutions, possibly in partnership with the Indonesia Australia Comprehensive Economic Partnership Agreement's Economic Cooperation Program and involving Australian and Indonesian training institutions and universities. Training institutions could build curriculum around the methods and tools established by IACCB.
- Consider the establishment of peer-to-peer learning mechanisms and networks, similar to the models that assisted IACCB partners to collaboratively learn and solve problems.
- Continue to provide targeted support to BKB Training Centre and IACCB partners with P4S status, to assist them to become commercially viable capacity-building providers, with the medium-term view of encouraging other firms to follow.

## **Annex 1: List of documents reviewed**

- 1. Progress report:**
  - IACCB Progress Report Feb-Jun 2016
  - IACCB Annual Progress Report July 2016 - June 2017
  - IACCB Annual Report Feb 2017 - Jan 18
  - IACCB Annual Progress Report July 2017-June 2018
  - IACCB Progress Report Feb - Jul 2019
  - IACCB Progress Report July - Dec 2019
  - IACCB Progress Report Jan-June 2020
  
- 2. Annual plans:**
  - IACCB Annual Plan 2016 – 2017
  - IACCB Annual Plan 2017 – 2018
  - IACCB Annual Plan 2018 - 2019
  - IACCB Annual Plan 2019 – 2020
  - IACCB Annual Plan 2020 – 2021
  
- 3. IACCB-Phase 1 Completion report**
  
- 4. Monthly & Quarterly reports**
  
- 5. Commercial Viability Assessments**
  
- 6. Project Performance Assessments**
  
- 7. Partner Scaling up plans**
  
- 8. Outreach to Government and Industry records**
  
- 9. Seminar/Symposium/Workshop records**
  
- 10. Presentations, Promotion & Webinars Records and reports**
  
- 11. Training Records and reports**
  
- 12. Gender and Social Inclusion Strategy**
  
- 13. IACCB Communication Strategy and Plan**
  
- 14. Prospectus for different cut-and-carry model herd sizes and SSKA-herds**

## Annex 2: List of stakeholders interviewed

Date	Name	Institution
Wed, 11 Nov 20	1. Zainuddin (General Manager) 2. Wahyu Darsono (Ranch Manager)	PT. Buana Karya Bhakti
	Ben Mullen	Technical Adviser ASG/IACCB
Thursday, 12 Nov 2020	Syahrian (Leader)	Pusat Pelatihan Pertanian Perdesaan Swadaya – Karya Baru Mandiri (P4S-KBM)
	Darwanto (Leader)	Sentra Peternakan Rakyat (SPR)
Friday, 13 Nov 2020	Muhammad Husni Tamrin (Director) Prof. Winugroho (National Secretary of BUMP)	BUMP PT. Cahaya Abadi Petani (CAP)
	Wiwik Sulistiyo (Head of agribusiness and livestock division) Wahyu Hari Abri (Staff)	Dinas Peternakan dan Perikanan Bojonegoro
Monday, 16 Nov 2020	1. Suhadi (Leader) 2. Agustinus (Secretaries)	Koperasi Produski Ternak Maju Sejahtera (KPT – MS)
	Handi Tanasaputra (Owner / director)	PT Kalterng Andinipalma Lestari / owner PT Kadila Feedlot
Tuesday, 17 Nov 2020	1. Fahrudin (GM) 2. Pandji (Vet – Manager)	PT Kalterng Andinipalma Lestari
	1. M Nasir Rofiq (head of palm oil research) 2. Sulastri (researcher)	<i>Agency for the Assessment and Application of Technology - Badan Pengkajian dan Penerapan Teknologi (BPPT)</i>
Wednesday, 18 Nov 2020	1. Sumin (Director) 2. Sihono (Manager)	PT Superindo Utama Jaya
Thursday, 19 Nov 2020	Ir. Suharyo (Head)	<i>Livestock and Animal Health Office Tanah Laut - Dinas Kesehatan hewan dan Peternakan Tanah Laut</i>
	Sugiono (Director)	<i>Director of Livestock Breeding and Production, DG Livestock and Animal Health, Ministry of Agriculture</i>
	Mr. Ross Ainsworth	<i>Cattle Health Adviser IACCB</i>
Friday, 20 Nov 2020	1. Sora Tampubolon 2. Harzon	Owner Koperasi Serba Usaha Wanita Pusaka Pertiwi (KSU WPP)
Mon, 23 Nov 2020	1. Rossana Dewi 2. Titik Eksa	Yayasan Gita Periwati
	1. Satia Pratiwi 2. Yullisa Fitriani	PT Bio Nusantara Teknologi
	Mr. John Ackerman	Director Mitra Asia
Thursday, 26 Nov 2020	Jody Koesmendo (Secretary general)	National Meat Board

<b>Friday, 27 Nov 2020</b>	<i>Syed Haider</i>	Assistant Director Economic, Trade & Infrastructure Section, DFAT	Indonesia
<b>Monday, 30 Nov 20</b>	<i>Mukti Sardjono (Executive Director)</i>	The Indonesia Palm Oil Association (GAPKI)	
	<i>George Hughes</i>	DAWE, Jakarta Post	
<b>Wed, 2 Dec 20</b>	Joni Liano (Executive Director)	the Association of Beef Cattle Ranch Business Communities in Indonesia (GAPUSPINDO)	

## Annex 3: Last Commercial Viability Assessments summary<sup>23</sup>

No	Partner	System	CVA component and score									Final Score (%)	Conclusion
			1	2	3	4	5	6	7	8	9		
1	BKB	SISKA	9	3	2	9	6	6	3	9	9	81	Commercially sustainable
2	KAL	SISKA	9	9	2	6	6	6	3	9	6	81	Commercially sustainable
3	BNT	SISKA	9	9	2	9	6	6	3	9	9	90	Commercially sustainable
4	SUJ	SISKA	9	9	2	3	4	6	3	9	9	78	Profitable but sustainability is uncertain
5	CAP	Open grazing	9	6	6	9	4	6	3	6	6	80	Commercially sustainable
6	SPR MJ	Cut and carry Smallholder	9	9	2	9	6	6	3	9	6	86	Commercially sustainable
7	KPT MS	Cut and carry	9	9	2	9	6	6	3	9	6	86	Commercially sustainable

<sup>23</sup> Conducted in December 2020

		Smallholder											
8	P4S KBM	Cut and carry Smallholder	9	6	2	9	6	9	3	9	6	86	Commercially sustainable

Notes:

1. BCS score (% of cattle with BCS $\geq$ 2.6): 1: < 50%, 2: 50 - 75%, 3: > 75%
2. Weaning rate score (% calf weaned after 12 mo): 1: >10% under KPI, 2: >5%-10% under KPI, 3:  $\geq$  KPI or 5% under KPI
3. ADG score: 1: >10% under KPI, 2: 6% - 10% under KPI, 3:  $\geq$  KPI 5% under KPI
4. Feeder cost (relative to Australian system) score: 1. Above KPI, 2: up to 35% under KPI, 3: More than 35% under KPI
5. Positive cash flow: 1: > 4 year, 2: 4 years, 3: < 4 years
6. IRR Score: 1: < 5%, 2: 5-10%, 3: > 10%
7. Social benefit score: 1: No involvement, 2: Some involvement, 3: Involving many local men and women
8. Security score (negative incidents with locals): 1: > 3 incident, 2: 1 – 3 incidents, 3: No incident

Management score (staff capacity building, system and process for business sustainability): 1: No effort, 2: There is effort but unable to solve complex problems, 3: Significant efforts for improvement clearly visit.