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The Centre for Global Food and Resources

Business Guidelines and Opportunities for Heifer Importation for Dairy Smallholders in Indonesia

Version 2 June 2020

AGB/2012/099: Improving milk supply, competitiveness and livelihoods of smallholder dairy chains in Indonesia

Australian Government
Australian Centre for International Agricultural Research

Dairy Australia
Your Levy at Work

Ministry of Agriculture Indonesia

IPB University
Bogor Indonesia

Australian Aid

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Disclaimer

Abbreviations

ACIAR	Australian Centre for International Agricultural Research
AMF	Anhydrous milk fat
AUD	Australian dollar
BPD	Regional Development Bank (Bank Pembangunan Daerah)
BMP	Butter milk powder
BSE	Bovine Spongiform Encephalopathy
CSIRO	Commonwealth Scientific & Industrial Research Organisation
DGLAH	Directorate General of Livestock and Animal Health
DFM	Domestic Fresh Milk
DWG	PISAgro Dairy Working Group
FMD	Foot and Mouth Diseases
GKSI	Indonesian Dairy Cooperatives Group
GOI	Government of Indonesia
IACCB	Indonesia-Australia Commercial Cattle Program
IAQA	Animal Quarantine and Biosafety Centre
ICARD	Indonesian Centre for Animal Research and Development
ICASEPS	The Indonesian Centre of Agricultural Socio-Economic Policy Studies
IDR (Rp)	Indonesian rupiah
kg	Kilogram
KUBE	Kelompok Usaha Bersama
KUD	Dairy village co-operatives (Koperasi unit desa)
KUR	People's Business Credit Scheme and Regulation (Kredit Usaha Rakyat)
MICoR	Manual of Importing Country Requirements
PISAgro	Partnerships for Indonesia's Sustainable Agriculture (PISAgro)
SB-IPB	Bogor Agricultural University Business School (Sekolah Bisnis Institut Pertanian Bogor)
SIMREK	Sistem Informasi Rekomendasi Perizinan/Information System for Approval Recommendation
SMP	Skim milk powder
TEFA	Teaching Factory for Agricultural Education
USDA	United States Department of Agriculture
WMP	Whole milk powder
WOAH/OIE	World Organization for Animal Health/Office International des Epizooties

1. Acknowledgments

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The project team would also like to thank everyone who contributed to the facilitation and participation in the workshop titled "*Importing dairy heifers into Indonesia: Opportunities and challenges for growing the national herd*" held at the Santika Hotel, on 28 September 2017 at Bogor, West Java. The presentations and minutes from this meeting provided the basis for these guidelines. Thanks to Rida Akzar, Vyta Hanifah, Jack Hetherington and Dr Sahara for organising the workshop, Dr Arief Daryanto for facilitating, and those who presented on the day: Ir. Jafi Alzagladi, Deputy Assistant of Livestock and Fisheries in Coordinating Ministry for Economic Affairs; Dr Cahyani Widyastuti (Head of Sub Directorate for Processing – Directorate General of Livestock and Animal Health); Dr. Mujiatun (Head of Sub Division for Imported Animals, Indonesia Agency for Agricultural Quarantine); Heru Prabowo, Greenfield Indonesia; Dr Erwidodo from ICASEPS; Mr Jack Hetherington from the University of Adelaide and Dr Brad Granzin from Australasian Dairy Consultants. Special thanks to Vyta Hanifah, Dr Erwidodo, Dr Brad Granzin and Zita Ritchie for writing these guidelines.

2. Project Description

These guidelines, ***Business Guidelines and Opportunities for Heifer Importation for small holders in Indonesia (Version 2 June 2020)***, is a deliverable of the research project ***IndoDairy - AGB/2012/099: Improving milk supply, competitiveness and livelihoods in smallholder dairy chains in Indonesia*** (2017-2021) funded by the Australian Centre for International Agricultural Research (ACIAR). This project arose due to the high priority the Indonesian government has placed on dairy industry development. This priority aligns closely with ACIAR research priorities related to strengthening livestock management and marketing systems in Indonesia as well as improving smallholder access and competitiveness in rapidly transforming markets.

The dairy farmers in West Java and North Sumatra face a multitude of challenges ranging from economies of scale, limited forage availability and quality, lack of knowledge in animal welfare and health practices, and business management skills. This situation has created a need for identification of whole of chain issues and capacity building exercises for the benefit of dairy farmers to ensure growth and sustainable development of the sector.

The aim of this project is to increase milk supply (quantity and quality) by 25% and net-household incomes by 2020 for at least 3,000 dairy producers in West Java and North Sumatra, Indonesia.

The primary objectives of IndoDairy are:

1. Identify and recommend strategies and policies to support development of sustainable, profitable and smallholder-inclusive dairy supply chains in North Sumatra and West Java;
2. Identify barriers to adoption of profitable management practices and farm business models and develop strategies to inform development of extension programs in West Java and North Sumatra;
3. Develop, pilot and evaluate best-bet dissemination to improve adoption of innovative dairy management practices by smallholder farmers in West Java.

Key investors in the project are: The Government of Indonesia (GOI), ACIAR, the University of Adelaide, the Indonesian Centre for Animal Research and Development (ICARD), Bogor Agricultural University and the Indonesian Centre of Agricultural Socio-Economic Policy Studies (ICASEPS).

For more information about the project, please visit:

www.indodairy.net

3. Background

Increasing the size of the Indonesian dairy herd is fundamental to increasing national milk supply from smallholder dairy farms. Increasing the number of heifers imported annually is one option to achieving this outcome. This guideline covers several topics relating to this:

- An overview of Indonesia's dairy industry and the potential increase in productivity through increasing the size of the national dairy herd;
- Government of Indonesia policies relating to dairy development in Indonesia and heifer importation;
- Heifer importation processes and logistics;
- Critical success factors relating to heifer importation;
- Identification of potential sources and models of government, private and farmer investment to support heifer imports;
- Key breed attributes that will lead to greater heifer productivity and longevity in small holder systems;
- Opportunities to import heifers from other tropical and subtropical dairying regions, such as northern Australia.

Much of the information presented in these guidelines are the outcomes from a workshop held on 28 September 2017 in Bogor, West Java. Contributors to this workshop are shown in Appendix 1. This edition is the second and final revision of these guidelines which were first published in July 2018.

4. An overview of Indonesia's dairy industry and the potential to increase productivity through increasing the size of the national dairy herd

4.1. Current supply and demand of dairy products in Indonesia

Figure 1 shows the historic, current and future demand and domestic supply of dairy products in Indonesia. In late 2019, annual demand for dairy products in Indonesia was estimated at 4.3 million tonnes milk equivalent. Of this demand, 3.3 million tonnes was being imported to supplement domestic milk production of 1.0 million tonnes. Annual growth in demand of dairy products in Indonesia is forecast to grow at 5% with domestic production projected to increase at 4.5% per year. Given these forecasts, the self-sufficiency of the Indonesian dairy industry to meet future consumer demand will reduce from 23% in 2017 to approximately 19% in 2022.

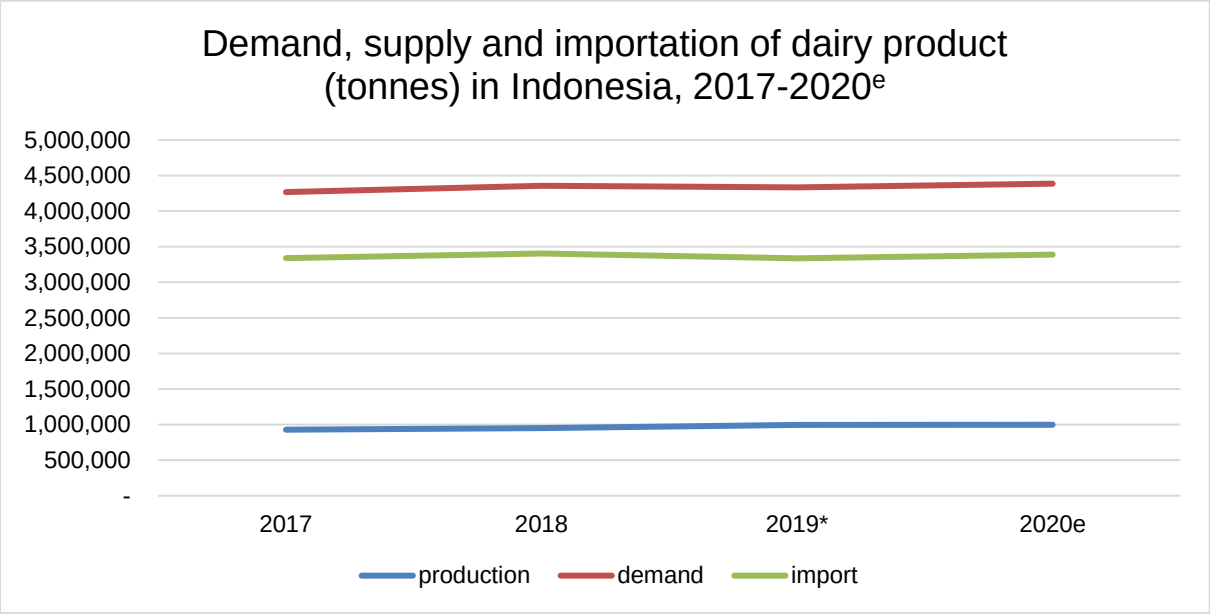

Figure 1. *Demand, supply and importation of dairy products in Indonesia: 2017 to 2020e*

2019*preliminary figure (for domestic supply);
2020e estimated figure agreed in the Synchronise Data Meeting in
Coordinating Ministry of Economic Affairs, 12 February 2020. Source. Statistic DGLAH, 2020

4.2. Population of dairy cows in Indonesia

Figure 2 shows the historic population of the Indonesian dairy herd over ten years between 2009 and 2019. 98% of Indonesia's milk production is concentrated in Java. Data shows little change in the size of the national herd when the population in 2009 is compared to 2019. There has been however significant variations in the national herd size over these ten years. A major factor causing a reduction in the size of the Indonesian dairy herd in 2013 were high beef prices. This led to the slaughter of approximately 28% of the nation's herd. Between 2013 and 2019, there was steady growth in the size of the nation's dairy herd.

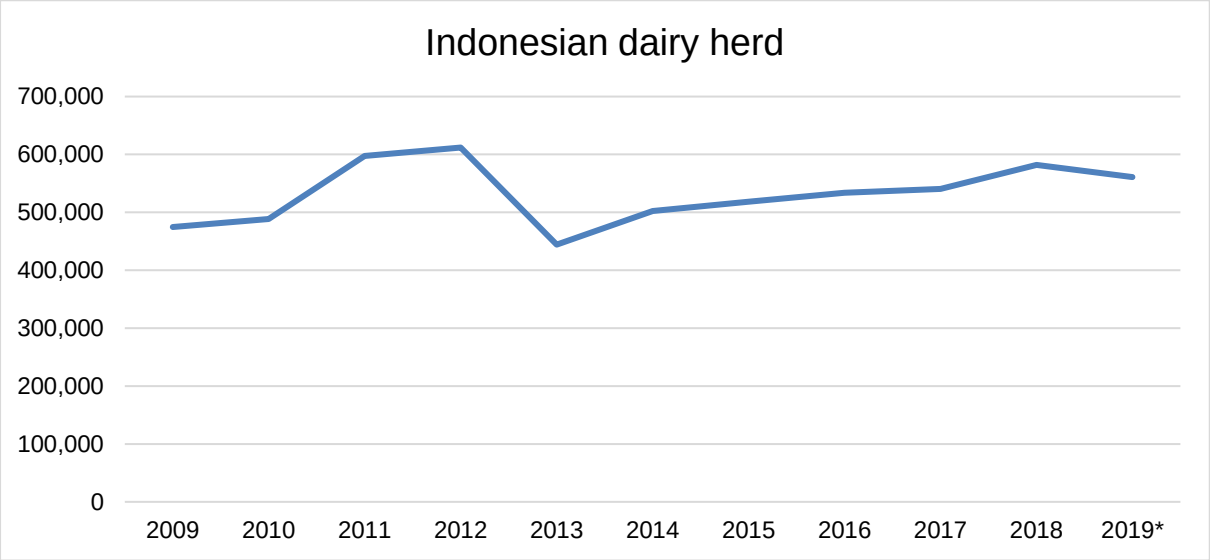

Figure 2. *The size of the Indonesia dairy herd from 2009 to 2019* (*2019 preliminary figure).*

5. Government of Indonesia (GOI) policies relating to dairy development and heifer importation

5.1. Policies relating to dairy development in Indonesia

As noted earlier, Indonesia is not self-sufficient in meeting the local demand for dairy products. The majority of dairy products are manufactured from imported anhydrous ingredients such as skim milk powder (SMP), whole milk powder (WMP), anhydrous milk fat (AMF) and butter milk powder (BMP). Countries exporting to Indonesia includes New Zealand, Australia, USA, Canada and the Netherlands (USDA 2019).

There are various companies in Indonesia involved in the manufacture of dairy products. These include: PT Nestle Indonesia; PT Indolakto; PT Frisian Flag Indonesia; PT Ultrajaya Milk Industry Tbk; PT Greenfields Indonesia; PT Diamond Cold Storage and PT Cisarua Mountain Dairy. There are various models in place regarding how these companies access their milk supply. Some have their own farms, others source milk from co-operatives (KUDs), while others source milk directly from farms.

A major GOI policy regarding dairy development in Indonesia is the Blue Print of Indonesia Dairy Industry 2013-2025. Key to this policy was the development of dairy regions outside of Java because intensive farm management on Java is constrained by land available for grazing and feeding of cattle. Based on the latest discussion with the Animal Production and Breeding Division, DGLAH, Ministry of Agriculture of Indonesia in May 2020, a prerequisite for chosen islands outside Java is they must be Brucellosis-free. A map released by DGLAH identifies 17 provinces that meet the requirement, which include North Sumatra, West Sumatra, Riau, Riau Islands, Bangka Belitung Islands, Jambi, Bengkulu, Lampung, West Kalimantan, Central Kalimantan, East Kalimantan, North Kalimantan, South Kalimantan, Bali and West Nusa Tenggara.

Increasing the heifer population also forms part of the overall development strategy outside of Java. One institution under DGLAH, the Centre for Breeding Superior Breed and High Quality Forages, has a responsibility of rearing heifers. The office is located in Baturraden sub-district, Banyumas District, Central Java. Currently, it has 1,200 dairy cows with a maximum capacity of 1,500 cows. However, the Centre has a limited number of replacement stock available for public purchase, with only 131 heifers compared to an estimated demand of 714 heifers. In early 2020, the Government started to import from Australia 100 dairy heifers out of a planned 200. This was still proceeding at the time of revising these guidelines. Imported heifers will be managed at the Centre and will help meet purchasing demands as well as help to improve genetic merit of the dairy cattle currently managed by the institution since the last successful importation in 2015.

In order to create an enabling environment for the development of milk processing businesses, the GOI has set a number of regulations. These policies generally relate to an integration between the factory and independent dairy farm, or a partnership between a cooperative and/or dairy farmers. The list below is a summary of regulations relating to dairy farming, milk processors and industry partnerships:

1. Government Regulation (PP) Number 6/2013: in Chapter 5, cites that "Partnerships should improve the synergy among actors in milk processing industries";
2. Law (UU) Number 41/2014: in Article 31 states that "Smallholders could build a business partnership in raising cattle based on a mutual agreement, strengthen each other, profitable, respect each other, responsible, interdependence and fairness";
3. Government Regulation (PP) Number 9/2016: regarding incentive in the form of a tax allowance facility for business actors in infant food processing, fresh milk and cream milk processors industry and powder and sweetened condensed milk processors;
4. Decree of Minister of Agriculture Number 13/2017: regarding livestock business partnerships, covering: types of business; business actors; pattern of business partnership; terms and conditions; guidance and monitoring;
5. Decree of Minister of Agriculture No. 33/2018 regarding milk supply and distribution of Domestic Fresh Milk (DFM) partnerships guidance and monitoring. Supply refers to productivity, dairy cattle population and milk quality.

For more information, please refer to the following links:

- http://gksi-jawabarat.co.id
- www.kemenperin.go.id/statistik/exim.php
- Ditjenpkh 2017, Livestock and Animal Health Statistics 2017, (ebook)

5.2. A review of relevant Government of Indonesia policies relating to heifer importation and national herd investment

There are various Indonesian government regulations that relate to the importation of dairy heifers. Business's intending to import heifers are advised to check for updates or changes to these policies and regulations before proceeding.

The list of policies relating to large ruminant importation (including dairy heifers) is as follows:

1. Government Regulation (PP) Number 82/2000, regarding animal quarantine;
2. Minister of Agriculture's Decree Number 113/2013, covering animal quarantine policies regarding the importation of breeding cattle, heifers, and cattle destined for slaughter;
3. Minister of Agriculture's Decree Number 44/2014 regarding place of entry and importation fees relating to quarantine processes (this decree is amending Decree of the Minister of Agriculture No. 94/2011);
4. Minister of Agriculture's Decree Number 70/2015, regarding animal quarantine installations;
5. Minister of Agriculture's Decree Number 49/2016, regarding importation of large ruminants into the territory of the Republic of Indonesia;
6. Minister of Trade's Decree Number 37/2016 regarding provisions on export and import of animal and animal products (this decree is amending Minister of Trade's Decree Number 5/2016);
7. Minister of Trade's Decree Number 59/2016 regarding the provisions on the export and import of animals and animal products;
8. Minister of Trade's Decree Number 13/2017 regarding the amendment to the Minister of Trade's Decree Number 59/2016 on provisions on the export and import of animals and animal products;
9. Minister of Agriculture's Decree Number 13/2017 regarding Partnerships in Livestock Farming;
10. Minister of Agriculture's Decree Number 26/2017 regarding supply and distribution of milk that also addresses multi-stakeholder partnerships;
11. Minister of Agriculture's Decree Number 02/2018 on the Amendment of Minister of Agriculture's Decree Number 49/2016 on the importation of large ruminants into the territory of the Republic of Indonesia;
12. Minister of Trade's Decree Number 20/2018 on the second amendment to the Minister of Trade's Decree Number 59/2016 on provisions on the export and import of animals and animal products;
13. Minister of Agriculture's Decree Number 51/2011 on the recommendation to import and export agreement for animal breeds into and from the territory of the Republic of Indonesia;
14. Minister of Agriculture's Decree Number 19/2012 on the requirement of quality, animal breeds and animal genetic resources.

5.3. Government of Indonesia policies relating to the funding of heifer importation

At the time of writing these guidelines, there are no specific GOI government funding schemes supporting heifer importation. However, there was a decree from the Coordinating Minister of Economic Affairs (Permenko) No 9/2016, administering the People's Business Credit scheme (Kredit Usaha Rakyat-KUR) to support and facilitate heifer importation, as well as developing dairy farming businesses. This decree was recently amended in November 2017 to become a new Permenko No 11/2017 and effectively implemented in January 1, 2018. The People's Business Credit scheme is discussed further in section 8.2.

For more information, please visit the following websites:

- www.karantina.pertanian.go.id
- http://karantina.pertanian.go.id/page-72-pedoman-karantina-hewan.html
- http://karantina.pertanian.go.id/page-12-impor-hewan-dan-produk-hewan.html
- http://karantina.pertanian.go.id/page-92-daftar-perusahaan-teregistrasi-karantina-hewan.html

6. Importing heifers into Indonesia: logistics, quarantine and other regulations

Importing dairy heifers into Indonesia falls under several government agencies and their respective regulations.

6.1. Animal Quarantine and Biosafety Centre (IAQA)

The IAQA operates under Ministry decree No. 43/2015. It has the key responsibility to implement technical protocols regarding live animal quarantine. This includes the preparation of technical policy, provision of technical guidance, monitoring and evaluation.

IAQA has 50 operational units across Indonesia. With respect to heifer importation, it has specialised Animal Quarantine Installations and a Quarantine Island. The Animal Quarantine Installations are placed in the same city with ports of entries, but some are located in other cities near the port. Currently, Quarantine Island is under assessment.

6.2. Port of entry to Indonesia.

IAQA has several ports of entries to Indonesia: 20 airports, 87 seaport/river port and 13 cross border checking posts.

Heifers arriving from Australia are imported through one of these ports depending on the country of origin and the final destination in Indonesia. Heifers must meet the requirements at the pre-border, border and post-border criteria during the initial inspection process in the Animal Quarantine Installations assigned to ports of entry.

There are eight decision points within the importation process. These are referred to as the 8-P in Bahasa. They are:

P1: Pemeriksaan (examination/inspection)
P2: Pengasingan (isolation)
P3: Pengamatan (observation)
P4: Perlakuan (treatment)
P5: Penahanan (detention)
P6: Penolakan (rejection)
P7: Pemusnahan (destruction)
P8: Pembebasan (release)

6.3. Heifer importation process

Under Indonesian regulations, the exporting country must be free from Foot and Mouth Disease (FMD), Rift Valley Fever and Contagious Bovine Pleuropneumonia.

The exporting country must also have negligible or controlled Bovine Spongiform Encephalopathy (BSE) risk based on a WOAH/OIE declaration. This includes having no cases of BSE over the last seven years and not allowing ruminant feeds containing Meat and Bone Meal.

The exporting country must also have a surveillance programme for antibiotic and hormone residues as well as other substances that may be dangerous to animal and human health. Any imported heifers must go through withdrawal protocols for antibiotics and growth hormone.

Exporting farms must be Registered Premises/Approved Premises and follow animal welfare principles and good farming practices.

The application pathway to import livestock under DGLAH within the Directorate of Breeding and Animal Production is as follows in Figure 3. The first step before importing heifers, applicants must have a recommendation from DGLAH, and afterwards, the implementation in port of entry is a responsibility of IAQA. To get the recommendation, applicants must apply online via SIMREK (Sistem Informasi Rekomendasi Perizinan) or in English, the Information System for Approval Recommendation. Once applicants are granted the recommendation, they can then proceed with importation in ports under IAQA.

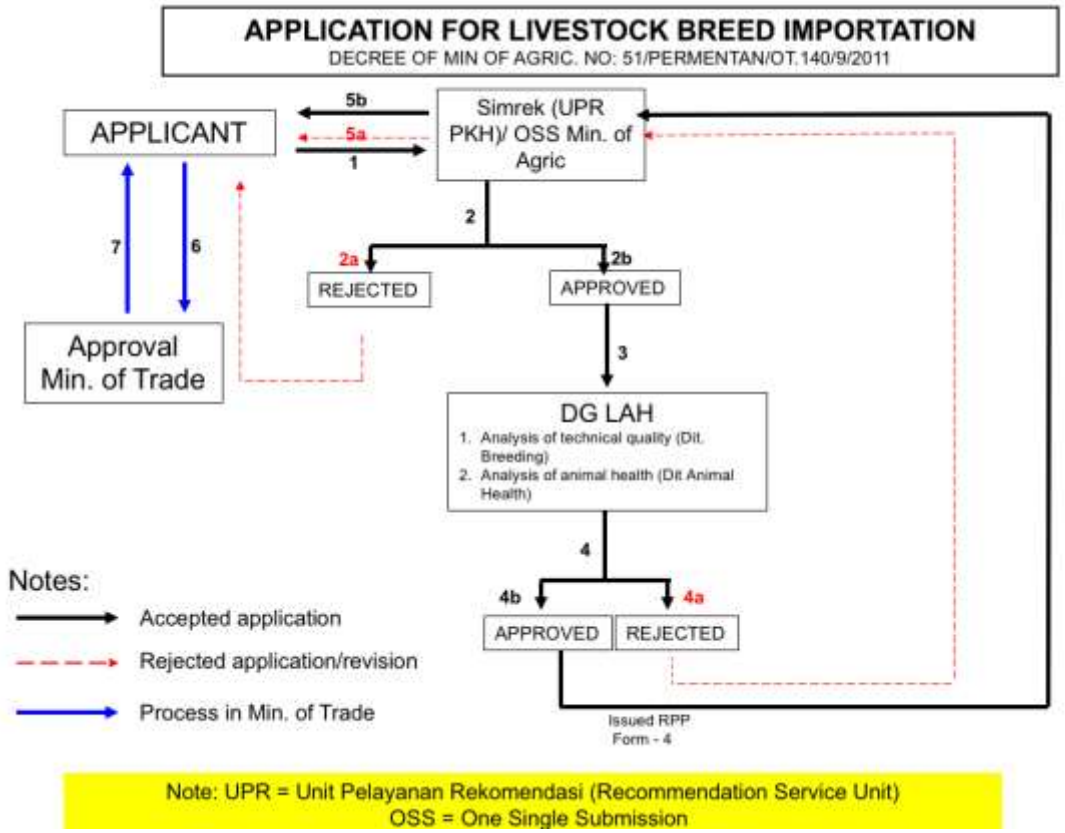

Figure 3. *Pathway of application for livestock breed importation (source DGLAH).*

Further information regarding procedures for importing heifers to Indonesia can be found at the following websites:

- Directorate for Breeding and Animal Production, DGLAH: http://bibit.ditjenpkh.pertanian.go.id/
- Importation mechanism via SIMREK under DGLAH: https://simrek.ditjenpkh.pertanian.go.id/
- Agency for Agriculture Quarantine: http://karantina.pertanian.go.id/
- MICoR - Manual of Importing Country Requirements: https://micor.agriculture.gov.au

6.4. Agents to assist with heifer importation.

Within Indonesia and Australia, there are various agents that will facilitate the importation of livestock into Indonesia. The list below has the details for Indonesian and Australian agents involved in international dairy heifer trading. Please check their websites for their latest status regarding facilitating heifer trade to Indonesia.

Indonesian agents as of April 2020:

- PT Greenfields Indonesia: https://greenfieldsdairy.com
- PT Raffles Pacific Harvest: Sukawangi, Jalan Rafflesia Blok Pari, Rancabango, Tarogong Kaler, Garut Regency, West Java 44151; Phone: (0262) 2804531.

- PT Nusantara Agri Sejati, Sukabumi, West Java
- PT Citra Agro Buana Sejahtera, Garut, West Java
- PT Agrijaya Prima Sukses, Subang, West Java
- PT Ultra Sumatera Dairy Farm, Karo, North Sumatera
- PT Global Dairi Alami, Subang, West Java
- PT Great Giant Livestock, Lampung Tengah, Lampung
  PT Fajar Taurus Farm, Sukabumi, West Java

Australia agents:

- ABL Exports: www.ablexports.com.au
- Australasian Global Exports: www.globalexp.com.au
- Australian Livestock Exporters: www.australiaslivestockexporters.com
- Australian Rural Exports (Austrex): www.austrex.com
- Austock Rural Pty Ltd: www.austockrural.com.au
- Cluny Livestock Exports: www.clunyexports.com
- Dairy Livestock Exports Pty Ltd: email: adam@dairylivestockexports.com.au
- Frontier International Agri Pty Ltd: www.frontierinternational.com.au
- Kennedy Creek Livestock Exports: www.kennedycreeklivestockexports.com.au
- Landmark International : www.landmarkinternational.com.au
- Nasna International Pty Ltd: www.nasna.com.au
  Total Livestock Genetics: www.tlg.com.au

7. An overview of successful examples of Indonesian dairy industry growth from heifer importation

PT Greenfields is a progressive large-scale dairy business. Its farm facilities are located in East Java.

Over the last twenty- two years, it has successfully imported dairy heifers from Australia and New Zealand and integrated these into their dairy farm of approximately 9,000 cows. Greenfields has achieved this outcome by focussing on the following aspects of heifer importation.

7.1. Ensuring that the imported breed meets the purpose of the milk processing business and the farm.

For a liquid milk processing business, Holstein Friesians are preferred due to their high yields and lower milk concentrations of fat and protein. For dairy businesses in the manufacturing of more concentrated products such as butter and condensed milk, Jersey's or crossbreds are preferred due to their higher milk concentrations of fat and protein and consequently lower extraction costs per litre. Consideration should be given to crossbreds when a farm is supplying a processor with multiple markets.

7.2. In regard to selecting breeds suitable for farming systems, a number of factors should be considered:

7.2.1. Is the farm lowland or upland in a cooler environment? Does the farm have infrastructure to keep cows cool?

Jerseys are naturally more heat tolerant than Friesians and should be considered when heat stress may be an issue.

7.2.2. Does the farm have adequate feed resources to sustain large cows?

For every 100 kilogram (kg) in liveweight, a dairy cow requires an extra 1 – 2 kg of feed (dry matter basis, depending on feed quality) just to maintain herself. For a small holder herd with eight milking cows, this would equate to an additional four tonnes of dry feed over a year or another 12 kg of dry feed per day just to maintain a herd of larger frame size. While bigger frame cows may have the potential to give more milk, they will only do so if the feed is available and of suitable quality.

7.2.3. What is the ideal age to import heifers?

Importing heifers that are four to five months pregnant is desirable. Importing at this stage allows the heifer to acclimatise to her new environment before calving.

7.2.4. What is the preferred way to transport heifers – by sea or air?

Table 1 below highlights some of the differences between transporting heifers by sea or air.

Sea freight offers the advantages of larger consignment size and cheaper cost. Air freight offers the advantages of more flexibility in terms of timing and shorter transit time.

Table 1. *Transportation options for heifer importation.*

Considerations	**Sea freight**	**Air freight**
Size of consignment	Up to 2,000	Up to 200
Cost	Less than 300 AUD or 3 million IDR per heifer	More than 300 AUD or 3 million IDR per heifer
Flexibility In numbers and timing	Less	More
Travel time	8 – 12 days	1 day

7.2.5 Is there a better time of the year to buy heifers?

If heifers are being imported from countries that seasonally calve, such as New Zealand and Southern Australia, it is easier to find them after the main calving period. This is typically from August to October.

7.2.6. Final comments

It has been Greenfield's experience that to gain maximum return on investment it is important to get heifers back into calf and ensure they have a long and productive life. Importing heifers to have them calve once is a poor investment.

8. Potential models of government, private and farmer investment to import dairy heifers into Indonesia.

At the time of publication, the project team could not find any specific funding scheme or regulation that could provide direct funding to support the importation of dairy heifers into Indonesia. There are however GOI regulations, projects, schemes and other international business models which are related to this topic:

- Indonesia-Australia Commercial Cattle (IACCB) Program;
- Regulation on People's Business Credit Scheme and Regulation (Kredit Usaha Rakyat-KUR);
- Stakeholder's Partnership in the Dairy sector (PISAgro-Dairy Working Group, ongoing IPS-Dairy Cooperatives partnerships).

8.1. Indonesia-Australia Commercial Cattle Breeding

Phase 1 of IACCB commenced in February 2016. The project has received funding for a second phase until February 2021. It is a program established under the auspices of the Indonesia-Australia Partnership on Food Security in the Red Meat and Cattle Sector. The IACCB project has evaluated a range of different breeding partnership models and investment opportunities with the private sector to identify commercially sustainable approaches that can be upscaled to facilitate investment, innovation and expansion of beef cattle breeding in Indonesia into the future.

The IACCB tested three cattle breeding models across six provinces on Sumatra, Java, Kalimantan and Sumbawa under co-investment project agreements with nine local partners. The proportion of investment by local partners amounted to 46% of total

funding. This included capital, land and labour. These models were based on extensive, semi intensive and cut and carry approaches. All were evaluated against nine key indicators (biophysical, financial and practice change outcomes). IACCB provided 1,315 heifers and 113 bulls, some infrastructure, and high-quality technical assistance. It was a condition of project partnerships that all project information and knowledge was shared with the wider industry. Total herd numbers at the end of Phase One were 2,362, an increase of 65%, driven largely by the provision of high quality IACCB technical assistance focussed on improving weaning rates.

The program has received a two-year extension (Phase Two) until February 2021, with each project continuing to receive technical assistance from IACCB until its closure. IACCB will gradually look to withdraw from the provision of technical advice over Phase 2 with private service providers taking over this role.

More information can be found at the Indonesia Australia Commercial Cattle Breeding Programme:

http://www.iaccbp.org

8.2. Loan Disbursement of People's Business Credit

As is common in developing countries, the availability and accessibility of business and investment credit are significant obstacles to the development of small and medium enterprises in the production and distribution sectors in Indonesia, including businesses in the general agricultural sector and dairy farming in particular. Over the last 20 years, the GOI has issued several business credit policies that apply across sectors and business sectors, including the last one called people's business credit, which was first issued by the government through the Regulation (Decree) of the Coordinating Minister for Economic Affairs (Permenko) No. 9 of 2016. This Permenko Decree was amended to become the new Permenko No 11/2017 and was effectively implemented on January 1, 2018.

It is important to note that there are 12 new provisions on KUR in Permenko No 11/2017, as follows: (i) KUR interest rate reduction from 9% to 7% effective per annum, (ii) business group as potential KUR recipients, (iii) special scheme of KUR, (iv) multisector KUR scheme, (v) minimum regulation of KUR distribution to the production sector, (vi) credit payment mechanism after harvest and grace period provisions, (vii) the change of retail KUR to micro KUR, (viii) ceiling of micro-KUR of production and outside production sector, (ix) distribution of KUR along with other credit, (x) KUR's cost structure for Indonesian labour movement/placement, (xi) KUR for communities in the border areas, and (xii) KUR for optimization of joint business group (Kelompok Usaha Bersama-KUBE).

The government is targeting KUR distribution in 2018 amounting to 120 trillion IDR, an increase from 2017 of 106.6 trillion IDR. The number of beneficiaries receiving KUR in 2018 is targeted to reach 4 million. Distribution of KUR in 2018 is carried out by 15 commercial and private banks, 19 Regional Development Banks (BPD), four non-bank financial institutions and two cooperatives.

For livestock credit, KUR distribution reported in April 2020 reached 3.37 trillion IDR which was approximately 37% of the total target of 9 trillion IDR in 2020. From this

amount, there are 120,697 debtors who accessed credit for dairy, beef cattle, small ruminants, poultry and integrated farming between crops and livestock.

For more information, please visit:

- Website: https://ekon.go.id/
- Twitter: @perekonomianRI
- Email: humas.ekon@gmail.com
  DG LAH: https://ditjenpkh.pertanian.go.id/

8.3. Partnerships for Indonesia's Sustainable Agriculture (PISAgro)

PISAgro is a collaborative platform between the Indonesian government, public and private sector to support the Government of Indonesia's ambition to increase agriculture productivity sustainably as part of the effort to improve food security. PISAgro was founded in June 2011 at the World Economic Forum on East Asia in Jakarta and was officially operational in 2012. The partnership is fully supported by the Coordinating Ministry for Economy, Ministry of Agriculture and Ministry of Trade. In 2015, PISAgro joined Grow Asia – a World Economic Forum and Association of Southeast Asian Nations Secretariat multi-stakeholder platform established as a regional coordinating body for national-level agriculture public-private partnerships.

PISAgro's mission is to provide an innovative, multi-stakeholder model for addressing the nation's agricultural challenges in a sustainable manner while improving the livelihoods of smallholder farmers.

As of November 2019, it had achieved:

- Reaching out to 566,541 smallholder farmers;
- Partnering with 265,979 smallholder farmers;
- Increasing smallholders' productivities up to 76%;
- Increasing smallholders' income of up to 80%;
- 335,113 ha land managed under good agricultural practices (GAP);
- Partnering with 85 public and private entities in 17 partnership projects.

PIS Agro-Dairy Working Group

Embedded in the PISAgro is the PISAgro-Dairy Working Group (DWG). The DWG is currently undertaking the following activities:

- Delivering capacity building to public agricultural vocational schools in Malang and Bogor through the Teaching Factory for Agricultural Education (TEFA) program which covers good agricultural practices such as designing cow sheds and feeding;
- Establishing model farms to demonstrate sustainable and profitable smallholder dairy farming;
- Promoting and facilitating fodder farming (especially maize), the use of nurseries, the distribution of better plant materials and development of various legumes;

- Rolling out financing models for farmers to scale up from currently 3-4 cows to 8 productive cows;
- Collaborating with cooperatives to establish and manage rearing farms.

To date, its impact has been:

- Reaching over 14,000 farmers participating in its activities, of which around 50% are women;
- Establishing 20 model farms;
- Partnering in the instillation of 10,000 ad-libitum water systems in barns;
- Over 8,000 farmhouses with biogas systems.

PISAgro-Dairy Working Group Partners include:

- Nestlé Indonesia;
- Brawijaya University;
- CSIRO;
- Milk Cooperatives;
- Bank BTPN.

For more information, please visit:

www.pisagro.org

8.4. Cow Leasing

Cow leasing is a method of purchasing livestock which allows a farmer to access new livestock without the upfront capital. Cow leasing is common to many international dairy industries such as Australia and New Zealand.

What are the steps in cow leasing?

- The finance company purchases the livestock retaining ownership.
- The farmer leases the cow for a fee, keeping any offspring and milk harvested.
- The farmer can choose to buy the livestock from the finance company at some point in time.
- The farmer repays the finance company the Purchase Price + Financing Cost.
- The farmer receives any sales generated, minus the financer's margins.
- Depending on the agreement, some lessors may cover the costs for replacement cows while others require the farmer to cover these.

For more information regarding cow leasing, please see the following websites:

- CowBank: www.cowbank.com.au
- Westpac: www.westpac.com.au/business-banking/business-loans/agrifinance/livestock-lease
- StockCo: www.stockco.com.au
- Investabull: www.investabull.com.au

8.5. Heifer International "Passing on the Gift"

Heifer International "Passing on the Gift" is a project model which has the dual outcomes of the dissemination of improved cattle genetics to many farmers (over time).

It has the following steps:

1. An organisation/company purchases one pregnant cow and gives it to a farmer;
2. The farmer owns the cow, but the farmer agrees that the first female calf will be "gifted" to another farmer;
3. The farmer gets to keep all the milk sales and other offspring;
4. This cycle is repeated.

For more information, please visit: Heifer International: www.heifer.org

9. Key breed attributes that will lead to greater heifer productivity and longevity in Indonesian small holder systems – importing from countries with similar environments.

Dairy farming in the tropics is challenging. High cow heat loads, poor quality forages, increased animal health challenges from bacteria and parasites are all potential limitations to productivity. Historically, many high genotype cows imported into tropical small holder systems have only utilised one third of their genetic potential under typical management. Often reproduction failure and disease are key reasons why heifers are culled. The section below describes the challenges of dairying in the tropics and lists many of the reasons for the underperformance of *Bos taurus* (European) cows in this environment.

Challenges of dairying in the tropics

High heat loads for *Bos taurus* (European)

Ideally *Bos Taurus* cows prefer 5 – 20^{o}C and low to moderate humidity;

- High heat loads lead to reduced intake, less energy for milk production and problems with reproduction;
- To overcome high heat loads for high producing dairy cows requires significant investment in infrastructure such as shading, sprinklers and fans.

Greater incidence of disease and pests

- Warm humid environments provide a suitable environment for disease causing bacteria e.g. mastitis
- More detrimental pests are often found in tropical regions e.g. parasites such as ticks, buffalo fly and their associated diseases such as tick fever and ephemeral fever;

Forage quality

- Tropical grasses such as Elephant grass have lower nutritional quality than temperate pasture such as ryegrass. This is due to their high concentrations of structural carbohydrates.
- As is the case in West Java, forage availability may also be limiting for some small holders.

Lack of access to cost-effective, high quality energy and protein supplements

- High energy supplements, such as grains, and high-quality protein supplements, such as vegetable protein meals, can be hard to access in some tropical regions.

10. Which other tropical dairy industries have similar environmental challenges to Indonesia? Are they a potential source of heifers for Indonesia?

Figure 4 below shows the major dairying countries located in the tropics.

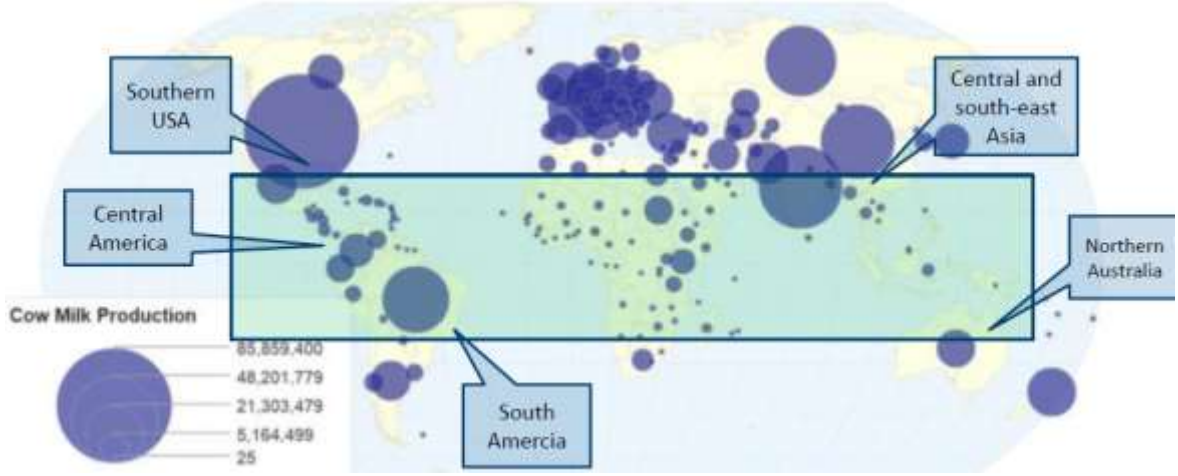

Figure 4. Major tropical and subtropical dairying countries and regions.

Historically, Indonesia has imported heifers from New Zealand and from Victoria in southern Australia. A potential strategy forward may be to import heifers from tropical countries such as Mexico, USA and northern Australia which are more genetically predisposed to the challenges of dairying in the tropics.

Are there heifers available internationally?

Figure 5 below shows the number of dairy heifers exported from Australia over the last decade and their average price. There is a relationship between the price Australian farmers have received for heifers and the amount supplied, with increased availability with increased prices.

The advent of technologies such as sexed semen and heat detection devices has meant an increase in the supply of heifers from the Australian dairy herd, despite the total national herd declining slightly over the last decade from 1.6 million head in 2009 to 1.45 million in 2019.

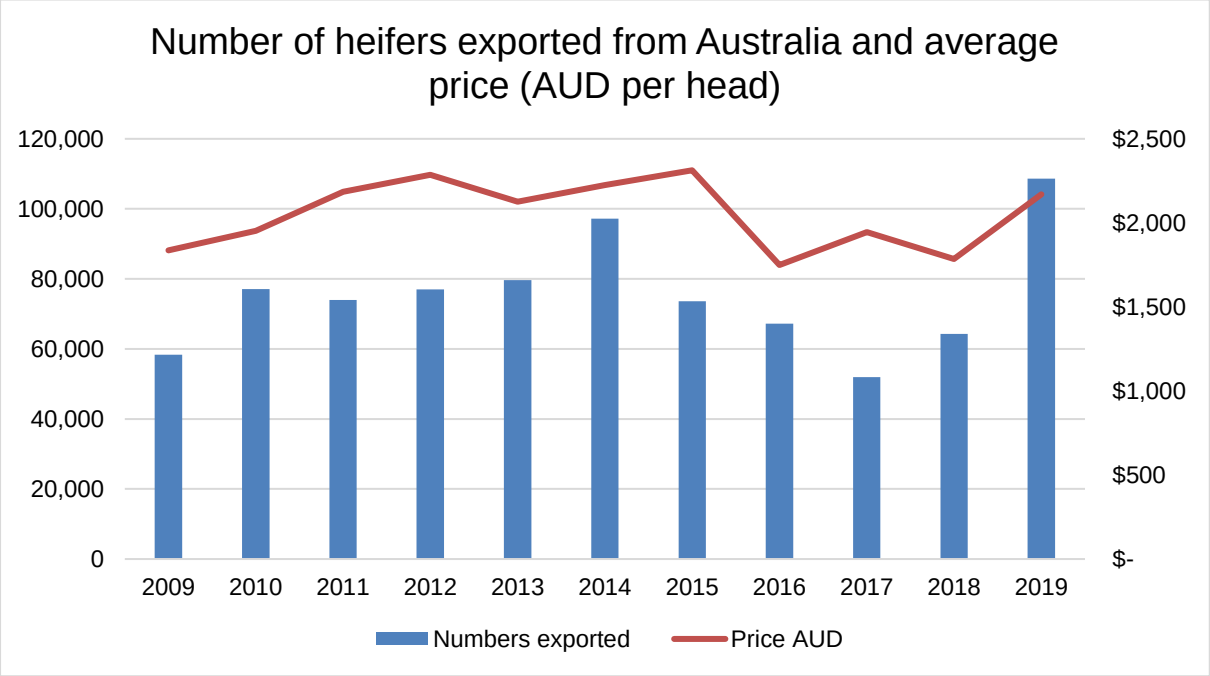

Figure 5. *Numbers and values of heifers exported from Australia between 2009 and 2019.*

For more information regarding heifer importation, please visit the following websites:

- DG LAH: https://ditjenpkh.pertanian.go.id/
- Indonesian Agency for Agricultural Quarantine: http://karantina.pertanian.go.id
- Department of Agriculture: www.agriculture.gov.au
- The Australian Livestock Export Corporation Ltd (LiveCorp): www.livecorp.com.au
- Stockair Global Livestock Transport: www.stockair.com.au

Appendix 1 – Participants of the workshop: "*Importing dairy heifers into Indonesia: Opportunities and challenges for growing the national herd*" held at the Santika Hotel, Bogor on 28 September 2017.

Name	Institutions/Organisations
Speakers	
Dr. Arief Daryanto	Business School IPB (SB IPB)
Dr. Tjahjani W	Directorate General of Livestock and Animal Health Indonesia
Dr. Erwidodo	Indonesian Centre for Agricultural Socio Economic and Policy Studies (ICASEPS)
Dr. Mujiatun, Msi	Indonesian Agricultural Quarantine Agency, Ministry of Agriculture
Heru Prabowo	Greenfield Indonesia
Jafi Alzagladi	Coordinating Ministry of Economic Affairs
Mr Jack Hetherington	University of Adelaide
Dr Brad Granzin	Australasian Dairy Consultants Pty Ltd
Participants	
Eno Suana	Cimory
Bambang Sutantio	Cimory
Budwi B	Fonterra
Efi L	Friesland Campina
Indra Wisudaputra	Neovia
Nia Pertiwi	Greenfield Indonesia
Helen	Meat and Livestock Australia
Umar	Meat and Livestock Australia
Toif Hidayatullah	Dinas Livestock and Fisheries Kab. Bogor
Shofia	Directorate General of Livestock and Animal Health Indonesia
Kunto Nugroho	Coordinating Ministry of Economic Affairs
Hadi Yanto	Coordinating Ministry of Economic Affairs
Nuraini	PPSNAk
Suherman	KPGS Cikajang
Ade Hikmat	KPGS Cikajang
Edi Djunaedi	KPS Cianjur
Adang S	KPBS Pangalengan
Nanang	KPS Bogor
Aan Supendi	GKSI Jabar
Ajat Sudrajat	GKSI Jabar
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Dr Wisri P	Indonesian Centre for Animal Research and Development (ICARD)
Dr Endang R	Indonesian Centre for Animal Research and Development (ICARD)
Dr Chalid Thalib	Indonesian Centre for Animal Research and Development (ICARD)

Hasanatun	Indonesian Centre for Animal Research and Development (ICARD)
Ir. Tati H	Indonesian Centre for Animal Research and Development (ICARD)
Tessa Magrianti	Indonesian Centre for Animal Research and Development (ICARD)
Ir Tri Bastuti	Indonesian Centre for Agricultural Socio Economic and Policy Studies (ICASEPS)
Dr Ening A	Indonesian Centre for Agricultural Socio Economic and Policy Studies (ICASEPS)
Dr Iwan S	Indonesian Centre for Agricultural Socio Economic and Policy Studies (ICASEPS)
Dr. Sahara	Business School IPB (SB IPB)
Dr. Heti Mulyati	Business School IPB (SB IPB)
Vyta W. Hanifah	Indonesian Centre for Agric. Technology Assessment and Development (ICATAD)
Rida Akzar	Business School IPB (SB IPB)
Bulan	Interpreter