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Report No: PAD4125

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US\$100 MILLION

TO THE

REPUBLIC OF INDONESIA

FOR AN

AGRICULTURE VALUE CHAIN DEVELOPMENT PROJECT (ICARE)

May 16, 2022

Agriculture and Food Global Practice
East Asia and Pacific Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective January 14, 2022)

Currency Unit = Indonesian Rupiah

IDR 1 = US\$0.000069

US\$1 = IDR 14,310

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AAEHRD	Agency of Agricultural Extension and Human Resources Development
AD-ART	<i>Anggaran Dasar dan Anggaran Rumah Tangga</i> (Memorandum and Articles of Association)
AFOLU	Agriculture, Forestry and Other Land Use
AIAT	Assessment Institute for Agricultural Technology
AWR	Agriculture War Room
BAPPENAS	<i>Badan Perencanaan Pembangunan Nasional</i> (Ministry of National Development Planning)
BRIN	<i>Badan Riset dan Inovasi Nasional</i> (National Research and Innovation Agency)
CPF	Country Partnership Framework
CRI	Corporate Results Indicator
DA	Designated Account
DFAT	Department of Foreign Affairs and Trade
DIPA	<i>Daftar Isian Pelaksanaan Anggaran</i> (Ministry Budget Document)
ECOP	Environmental Code of Practice
EFA	Economic and Financial Analysis
EIRR	Economic Internal Rate of Return
EOP	End-of-Project
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESS	Environmental and Social Standards
EX-ACT	Ex-Ante Carbon Balance Tool
FAO	Food and Agriculture Organization (of the United Nations)
FLW	Food Loss and Waste
FMA	Financial Management Assessment
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GEMS	Geo-Enabling Initiative for Monitoring and Supervision
GHG	Greenhouse Gas

GIS	Geographic Information System
GIZ	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i> (German Agency for International Cooperation)
GoI	Government of Indonesia
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
IAARD	Indonesian Agency for Agricultural Research and Development
ICARE	Agriculture Value Chain Development Project
ICB	International Competitive Bidding
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFR	Interim Financial Report
IPF	Investment Project Financing
IsDB	Islamic Development Bank
KADIN	<i>Kamar Dagang dan Industri Indonesia</i> (Indonesia Chamber of Commerce and Industry)
KP	<i>Korporasi Petani</i> (Farmer Corporation)
KWT	<i>Kelompok Wanita Tani</i> (Women Farmer Group)
LKPP	<i>Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah</i> (National Public Procurement Agency)
LMP	Labor Management Procedures
M&E	Monitoring and Evaluation
MIS	Management Information System
MoA	Ministry of Agriculture
MoF	Ministry of Finance
MoU	Memorandum of Understanding
MSMEs	Micro, Small, and Medium Enterprises
NDC	Nationally Determined Contribution
NGO	Nongovernmental Organization
NSC	National Steering Committee
PBC	Performance-Based Condition
PDO	Project Development Objective
PIU	Project Implementation Unit
PMU	Project Management Unit
POM	Project Operational Manual
PP	Procurement Plan
PPK	<i>Pejabat Pembuat Komitmen</i> (Commitment-making Official)
PPSD	Project Procurement Strategy for Development
QCBS	Quality and Cost-based Selection
RPF	Resettlement Policy Framework
RPJMN	<i>Rencana Pembangunan Jangka Menengah Nasional</i> (National Medium-Term Development Plan)
SEP	Stakeholder Engagement Plan
SMARTD	Sustainable Management of Agriculture Research and Technology Development
SPSE	<i>Sistem Pengadaan Secara Elektronik</i> (Electronic Procurement System)
STEP	Systematic Tracking of Exchanges in Procurement

TA	Technical Assistance
TAC	Technical Appraisal Committee
WBG	World Bank Group

Regional Vice President: **Manuela V. Ferro**

Country Director: **Satu Kristiina Jyrintytar Kahkonen**

Regional Director: **Benoit Bosquet**

Practice Manager: **Dina Umali-Deininger**

Task Team Leader(s): **Vikas Choudhary, Jan Joost Nijhoff**



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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Indonesia	Agriculture Value Chain Development Project (ICARE)	
Project ID	Financing Instrument	Environmental and Social Risk Classification
P173487	Investment Project Financing	Substantial

Financing & Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternate Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
09-Jun-2022	30-Jun-2027

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The Project Development Objective is to support environmentally and financially sustainable and inclusive agricultural value chains in selected locations

**Components**

Component Name	Cost (US\$, millions)
Component A: Strengthening value chains in selected Kawasan Pertanian (agri-zone clusters)	64.39
Component B: Strengthening institutional capacity for value chain development	44.71
Component C: Project management	10.00

Organizations

Borrower:	The Republic of Indonesia
Implementing Agency:	Ministry of Agriculture

PROJECT FINANCING DATA (US\$, Millions)**SUMMARY**

Total Project Cost	119.10
Total Financing	119.10
of which IBRD/IDA	100.00
Financing Gap	0.00

DETAILS**World Bank Group Financing**

International Bank for Reconstruction and Development (IBRD)	100.00
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Non-World Bank Group Financing

Counterpart Funding	10.00
Borrower/Recipient	10.00
Commercial Financing	9.10
Unguaranteed Commercial Financing	9.10



INSTITUTIONAL DATA

Practice Area (Lead)

Agriculture and Food

Contributing Practice Areas

Environment, Natural Resources & the Blue Economy, Finance, Competitiveness and Innovation, Water

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	● Moderate
2. Macroeconomic	● Moderate
3. Sector Strategies and Policies	● Substantial
4. Technical Design of Project or Program	● Moderate
5. Institutional Capacity for Implementation and Sustainability	● Substantial
6. Fiduciary	● Substantial
7. Environment and Social	● Substantial
8. Stakeholders	● Moderate
9. Other	● Substantial
10. Overall	● Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

☐ Yes ☒ No

Does the project require any waivers of Bank policies?

☐ Yes ☒ No



Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
Cultural Heritage	Not Currently Relevant
Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

Legal Covenants

Sections and Description

The Borrower shall be responsible for the provision of overall policy guidance and coordination to the Project through the National Steering Committee. (Section I.A.2 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower shall maintain, throughout Project implementation, the National Steering Committee, with a composition, institutional framework, functions, and resources satisfactory to the Borrower and the Bank for such purpose. (Section I.A.3 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through Ministry of Agriculture, particularly IAARD and AIATs, and specifically the Project Management Unit and the Project Implementation Units, shall be responsible for Project management, implementation, including administrative and financial management, disbursement, procurement, environmental



and social management, and monitoring and evaluation. (Section I.A.4 of Schedule 2 to the Loan Agreement)

Sections and Description

To this end, the Borrower, through Ministry of Agriculture, shall maintain, throughout Project implementation, the Project Management Unit and the Project Implementation Units, with an institutional framework, functions, and resources, including competent personnel in adequate numbers, satisfactory to the Borrower and the Bank for such purpose. (Section I.A.5 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through Ministry of Agriculture, shall maintain, throughout Project implementation, a technical team within IAARD, with a composition, institutional framework, functions, and resources satisfactory to the Borrower and the Bank for providing technical support to the Project Management Unit and the Project Implementation Units. (Section I.A.6 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through Ministry of Agriculture, shall ensure that each Project Implementation Unit shall, not later than six (6) months after the Effective Date, appoint and thereafter maintain, throughout Project implementation, a coordinator at the Kawasan Pertanian level for supporting the relevant Project Implementation Unit in coordinating Project activities at the Kawasan Pertanian level. (Section I.A.7 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through Ministry of Agriculture, shall prepare and furnish to the Bank for its review and no-objection, the Project Operations Manual, in form and substance acceptable to the Bank, which shall include: (i) the description of: (A) implementation arrangements including delineation of roles and responsibilities of various entities, institutions and agencies involved in Project implementation and their coordination; (B) the procurement procedures and standard procurement documentation; (C) disbursement arrangements, reporting requirements, financial management procedures and audit procedures; (D) procedures for preparing and reviewing a consolidated annual work plan and budget for each Fiscal Year; (E) the Project performance indicators and monitoring and evaluation arrangements; (F) arrangement and procedures for the management of environment and social aspects; and (G) such other administrative, financial, technical and organizational arrangements and procedures as shall be required for the Project; (ii) the KP Matching Grant Manual for the provision of the KP Matching Grants, including the eligibility criteria and procedures for identifying and screening Korporasi Petani, appraising KP Business Plans, and extending, monitoring and evaluating KP Matching Grants, including templates of KP Matching Grant Agreements, grievance redress mechanisms in connection therewith, and communication strategies; and the Competitive Technology Grant Manual for the provision of the Competitive Technology Grants, including the eligibility criteria and procedures for identifying and screening Eligible Beneficiaries, appraising proposal for Competitive Technology Grants, and extending, monitoring and evaluating Competitive Technology Grants, including templates of Competitive Technology Grant Agreements, grievance redress mechanisms in connection therewith, and communication strategies. (Section I.B.1(a) of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through Ministry of Agriculture, shall afford the Bank a reasonable opportunity to review the proposed Project Operations Manual. (Section I.B.1(b) of Schedule 2 to the Loan Agreement)

Sections and Description



The Borrower, through Ministry of Agriculture, shall promptly adopt the Project's operations manual as accepted by the Bank. (Section I.B.1(c) of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through Ministry of Agriculture, shall ensure that the Project is carried out in accordance with the Project Operations Manual, and shall not amend or waive, or permit to be amended or waived, any provision of the Project Operations Manual without the Bank's prior written no-objection. (Section I.B.2 of Schedule 2 to the Loan Agreement)

Sections and Description

Except for the Fiscal Year during which this Agreement shall become effective, the Borrower, through Ministry of Agriculture, shall: (a) prepare and furnish to the Bank not later than February 15 of each year, a draft Annual Work Plan and Budget for the Project for review and comment, setting forth the Project's financing plan and schedule and summarizing the implementation progress of the Project for the said Fiscal Year and the activities under the Project (including, inter alia, Incremental Operating Costs and Training) to be undertaken in the following Fiscal Year (together with documentary evidence that the environment and social management obligations related to such upcoming Project activities shall be fully complied with in a timely fashion in accordance with the ESCP), including the proposed annual budget and sources of financing for the Project; (b) taking into account the Bank's comments, finalize and furnish to the Bank not later than June 1 of each year, the Annual Work Plan and Budget, acceptable to the Bank; and (c) thereafter ensure the implementation of the Project during the following Fiscal Year in accordance with the relevant Annual Work Plan and Budget agreed with the Bank and in a manner acceptable to the Bank. Any amendment, suspension, abrogation or waiver to an Annual Work Plan and Budget required during the Fiscal Year covered by such plan shall be subject to the prior written no-objection of the Bank. (Section I.C.1 of Schedule 2 to the Loan Agreement)

Sections and Description

For the Fiscal Year during which this Agreement shall become effective, the Borrower, through Ministry of Agriculture, shall: (a) prepare and furnish to the Bank not later than [one (1)] month after the Effective Date, a draft Annual Work Plan and Budget for the Project for review and comment, setting forth the Project's financing plan and schedule and summarizing the implementation progress of the Project for the said Fiscal Year and the activities under the Project (including, inter alia, Incremental Operating Costs and Training) to be undertaken in the following Fiscal Year (together with documentary evidence that the environment and social management obligations related to such upcoming Project activities shall be fully complied with in a timely fashion in accordance with the ESCP), including the proposed annual budget and sources of financing for the Project; (b) taking into account the Bank's comments, finalize and furnish to the Bank not later than [two (2)] months after the Effective Date, the Annual Work Plan and Budget, acceptable to the Bank; and (c) thereafter ensure the implementation of the Project during the following Fiscal Year in accordance with the relevant Annual Work Plan and Budget agreed with the Bank and in a manner acceptable to the Bank. Any amendment, suspension, abrogation or waiver to an Annual Work Plan and Budget required during the Fiscal Year covered by such plan shall be subject to the prior written no-objection of the Bank. (Section I.C.2 of Schedule 2 to the Loan Agreement)

Sections and Description

No later than August 31, 2025, or such other date agreed with the Bank, the Borrower, through Ministry of Agriculture, shall, in conjunction with the Bank, carry out a mid-term review of the Project (the "Mid-term Review"), covering the progress achieved in the implementation of the Project. To this end, the Borrower shall



prepare - under terms of reference satisfactory to the Bank - and furnish to the Bank not less than three (3) months prior to the beginning of the Mid-term Review, a report integrating the results of the Project's monitoring and evaluation activities, on the progress achieved in the carrying out of the Project during the period preceding the date of such report, and setting out the measures recommended to ensure the efficient carrying out of the Project and the achievement of the objective of the Project during the period following such date. Following the Mid-term Review, the Borrower, through Ministry of Agriculture, shall act promptly and diligently in order to take, or cause to be taken, measures recommended to ensure the efficient completion of the Project and the achievement of the objective as well as any corrective action deemed necessary by the Bank to remedy any shortcoming noted in the carrying out of the Project in furtherance of the objective of the Project. (Section II.2 of Schedule 2 to the Loan Agreement)

Sections and Description

For the purposes of implementing Part 1.2(c) and Part 2.1 (a) of the Project, the Borrower, through Ministry of Agriculture, shall make KP Matching Grants to Korporasi Petani and Competitive Technology Grants to Eligible Beneficiaries in accordance with eligibility criteria and procedures acceptable to the Bank and set forth in the KP Matching Grant Manual and the Competitive Technology Grant Manual, respectively. (Section I.E.1 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through Ministry of Agriculture, shall make (A) each KP Matching Grant under a KP Matching Grant Agreement with the relevant Korporasi Petani, and (B) each Competitive Technology Grant under a Competitive Technology Grant Agreement with the relevant Eligible Beneficiary, all on terms and conditions approved by the Bank and set forth in the KP Matching Grant Manual and the Competitive Technology Grant Manual, respectively, which shall include the details as set out in Section I.E.2 of Schedule 2 to the Loan Agreement. (Section I.E.2 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through Ministry of Agriculture, shall furnish to the Bank each Project Report not later than forty-five (45) days after the end of each calendar semester, covering the calendar semester. (Section II.1 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through Ministry of Agriculture, shall, not later than one (1) month after the Effective Date, appoint and thereafter maintain a commitment officer and an assistant treasurer in the Project Management Unit and Project Implementation Units to assist with the payment verification process for all activities of the Project. (Section I.A.8 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through Ministry of Agriculture, shall be responsible for Project management, implementation, and monitoring and evaluation in accordance with the following institutional arrangements. (Section I.A.1 of Schedule 2 to the Loan Agreement)

Conditions



Type	Financing source	Description
Effectiveness	IBRD/IDA	The Additional Condition of Effectiveness is that the Borrower, through the Ministry of Agriculture, has adopted the Project Operations Manual, in form and substance satisfactory to the Bank.(Section 4.01 of the Loan Agreement)



I. STRATEGIC CONTEXT

A. Country Context

1. **Indonesia's economy has been resilient to recent global shocks.** Between 2015 and 2019, Indonesia maintained an average annual real gross domestic product (GDP) growth rate of 5 percent. However, the economy contracted by 2.1 percent in 2020 following the onset of the global COVID-19 pandemic.¹ The economic rebound from COVID-19 in 2021 was moderated by the COVID-19 Delta wave. The highly transmissible Delta variant led to increased viral transmission in June–September 2021 and held back the reopening of the economy. Growth slowed to 3.5 percent year-over-year during the third quarter, after accelerating to 7.1 percent in the previous quarter.² Notwithstanding, the economy showed signs of resilience. The economy was projected to rebound by 3.7 percent in 2021 and grow by 5.2 percent in 2022 assuming Indonesia does not experience a new severe COVID-19 wave.³
2. **Indonesia continues to make progress in reducing poverty, though the pace of decline has been slowing down in recent years and has been severely affected by the ongoing COVID-19 pandemic.** Based on the internationally comparable benchmark of US\$1.9/day (2011 purchasing power parity [PPP]), Indonesia is among countries that have made the fastest gains in poverty reduction in the last two decades. Between 2000 and 2015, the US\$1.9/day poverty rate in Indonesia declined by 2.1 percentage points a year. Based on the national poverty line, poverty has also continued to decline, going down to 9.4 percent in March 2019. However, the pace of poverty reduction post 2010 was about half of what it used to be between 2003 and 2010.⁴ Indonesia's official statistics reported a slightly higher poverty rate of 10.2 percent as of September 2020, in large part deriving from the COVID-19 pandemic impacts.⁵ Despite the July 2021 surge in COVID-19 cases driven by the Delta variant, however, the country's poverty rate in September 2021 had declined to 9.7 percent or equal to 26.50 million people, continuing a downward trend since March 2021 (10.1 percent).⁶
3. **Sustained growth in living standards has led to the emergence of a new middle class.** As more and more Indonesians have escaped from poverty in recent decades, their children have enjoyed greater opportunities, with better access to education and health, cleaner and safer living conditions, and have entered the workforce with greater skills than their parents. The emergence of this new middle class has occurred within a single generation. From only 7 percent of the population in 2002, the Indonesian middle class has grown to 22.5 percent of the population in 2018.⁷ Higher middle-class incomes have contributed to increased demand for more diversified and processed foods, higher standards of food quality and safety, and emergence of an organized retail sector.
4. **As a country that is vulnerable to the adverse impact of climate change and a major contributor to global greenhouse gas (GHG) emission, Indonesia is highly committed to reducing GHG emission and**

¹ World Bank. 2020. East Asia and Pacific Economic Update, April 2020.

² World Bank. 2021. Indonesia Economic Prospect, December 2021.

³ World Bank. 2021. Indonesia Economic Prospect, December 2021.

⁴ Source: SUSENAS.

⁵ World Bank. 2021. Indonesia: Poverty and Equity Brief. October 2021.

⁶ Statistics Indonesia (*Badan Pusat Statistik*), Government of Indonesia.

⁷ World Bank. 2019. Aspiring Indonesia: Expanding the Middle Class, September 2019.



improving resilience. Through its “Long-Term Strategy for Low Carbon and Climate Resilience 2050”,⁸ Indonesia has increased its ambition on GHG reduction to rapidly reach net zero emission by 2060 or sooner. To enhance resilience to climate change, adaptation ambitions in the updated Nationally Determined Contribution (NDC) 2021 were enhanced through programs, strategies, and actions aiming to achieve economic, social and livelihood, and ecosystem and landscape resilience.

5. **About 43 percent⁹ of Indonesia’s population reside in rural areas and close to 29 percent¹⁰ of the Indonesian workforce work in the agricultural sector.** Primary agricultural production¹¹ accounted for 13.7¹² percent of GDP in 2020. Agribusinesses, comprising agro-input, agro-processing, agro-trading, agro-logistics, and food retail and wholesale, employ significant workforce in the manufacturing and services sector and are crucial for meeting the rising demand of food and agro-industrial products.

6. **Indonesia is undergoing an economic transformation that offers opportunities for a green and resilient rural sector growth.** While the process of structural transformation will lead to the share of primary agriculture in national GDP and employment to decline over time, a modernizing food system—comprising farmers, service providers, food manufacturers, and distribution companies—has much to contribute to Indonesia’s higher-level development objectives. Consumer demand for food among an emerging and rapidly expanding middle class is providing opportunities for the food system to grow, improving farmer welfare and enhancing the country’s nutritional status in the process. Yet, this growth does not include many of the producers in rural areas, many of whom receive insufficient support to participate in markets and for whom a lack of resilience to the effects of climate change presents an ever-growing problem. A new, integrated support model is required that addresses challenges along the value chain and enables stakeholders to respond to existing and future market opportunities.

B. Sectoral and Institutional Context

Indonesia’s agriculture sector needs to become more inclusive while responding to evolving market opportunities and increasingly complex challenges

7. **Indonesia’s agriculture is dominated by small-scale farmers.** There are 33.5 million farmers in Indonesia, spread across 27.7 million agricultural households. Close to 90 percent of farmers in Indonesia own less than 2 ha of land—within this group, two-thirds own less than 0.5 ha. There are regional differences, with holding size in Java being typically smaller than on other major islands. Approximately half of Indonesian farms, however, are located in Java. In addition, 61 percent of farmers are above the age of 45 and 74 percent have only received primary education¹³. These characteristics make farmers more vulnerable to market and climate shocks. The fragmented and small size of land holdings hinder

⁸ Long-Term Strategy for Low Carbon and Climate Resilience 2050, Government of Indonesia.

https://unfccc.int/sites/default/files/resource/Indonesia_LTS-LCCR_2021.pdf

⁹ World Development Indicators, World Bank.

¹⁰ Statistics Indonesia (*Badan Pusat Statistik*), Government of Indonesia.

¹¹ Primary agricultural production refers to the production of products of the soil and of stock farming, including harvesting, milking and farmed animal production prior to slaughter, without performing any further operation changing the nature of such products.

¹² World Development Indicators, World Bank.

¹³ Statistics Indonesia. 2018. *Agriculture Intercensal Survey*.

<https://www.bps.go.id/publication/2019/10/31/9567dfb39bd984aa45124b40/hasil-survei-pertanian-antar-sensus--sutas--2018-seri-a2.html>



achieving economies of scale and pose significant challenges with respect to procurement efficiency and accessing financial services, marketing, mechanization, and traceability, among others. Commercialization and the transformation of food supply chains offer new opportunities for smallholder farmers. However, responding to these opportunities requires greater managerial skills and an ability to provide continuity of supply and meet food safety, certification, and quality requirements, which would be more difficult to meet for farms operating at a smaller scale. If they are unable to adapt to the changing markets, smallholders may run the risk of becoming increasingly disconnected from modern value chains, turning into unviable economic units.¹⁴

8. **In rural communities of Indonesia, agricultural production activities are carried out by family units, and approximately 10 percent of agricultural households are female headed.**¹⁵ Rural micro, small, and medium enterprises (MSMEs) play an important role in agricultural value chains while providing off-farm work opportunities for rural women, who are often engaged in the agricultural post-harvest activities. Nationally, women run 39 percent of all micro and small enterprises and 18 percent of medium and large enterprises.¹⁶ Increasingly, women must take up the work typically done by men in agriculture, due to rural-to-urban migration of men for off-farm employment. However, women often have little control over valuable resources and assets such as land, labor, and new technologies due to multiple compounding factors such as cultural and religious norms, education levels, mobility, etc.^{17,18} Women represent 24 percent of farmers and own a smaller farm holding size (0.2 ha), on average, compared to men (0.6 ha).¹⁹ As identified in the 2019 Country Gender Assessment of Women in Agriculture of the Food and Agriculture Organization (FAO), women in the agriculture sector in Indonesia are marginalized and face multiple barriers, which include lack of access to financial resources, knowledge, and technology to improve their crop yields and livelihoods. Women are typically less involved in agricultural groups and associations than men, which is a significant disadvantage in agricultural development because individuals without group affiliation are less visible to Government representatives as well as private sector. Leadership positions in farmer groups and cooperatives, which play key roles in community-level agricultural decision-making processes, are typically held by men. Data from other sectors also show that women's representation in leadership and senior management positions is very low across the board in Indonesia. For example, at the provincial level, women's parliamentary representation remains approximately 18%²⁰, and a recent private-sector focused survey found that only 15% of enterprises

¹⁴ FAO. 2015. *The Economic Lives of Smallholder Farmers: An Analysis Based on Household Data from Nine Countries*. <https://www.fao.org/3/i5251e/i5251e.pdf>.

¹⁵ Statistics Indonesia. 2018. *Agriculture Intercensal Survey*. <https://www.bps.go.id/publication/2019/10/31/9567dfb39bd984aa45124b40/hasil-survei-pertanian-antar-sensus--sutas--2018-seri-a2.html>.

¹⁶ Ibid.

¹⁷ Although under both cultural norms and customary and formal laws in Indonesia, both men and women have rights to land ownership and land inheritance, they do not have equal rights. The Agrarian Law No. 5/1960 recognizes individual land ownership, and that women and men have equal rights to land ownership in order to utilize and derive benefits from land for themselves and their families. Nevertheless, in practice, women have less ownership of land due to traditional gender roles, as well as cultural and religious practices.

¹⁸ FAO. 2019. *Country Gender Assessment of Agriculture and the Rural Sector in Indonesia*. <https://reliefweb.int/sites/reliefweb.int/files/resources/ca6110en.pdf>.

¹⁹ Statistics Indonesia. 2018. *Agriculture Intercensal Survey*. <https://www.bps.go.id/publication/2019/10/31/9567dfb39bd984aa45124b40/hasil-survei-pertanian-antar-sensus--sutas--2018-seri-a2.html>.

²⁰ Aspinall E, White S, Savirani A. Women's Political Representation in Indonesia: Who Wins and How? *Journal of Current Southeast Asian Affairs*. 2021;40(1):3-27. doi:[10.1177/1868103421989720](https://doi.org/10.1177/1868103421989720)



reported having a female CEO.²¹ Women farmers are also less likely to receive training, benefit from bulk buying, or gain access to other resources.

9. **Food prices in Indonesia are high, disproportionately affecting the poor and vulnerable, and limiting access to a nutritious diet.** International estimates suggest that Indonesia's food prices, especially for high-nutrition commodities such as fruits and vegetables, are the highest in the region.²² Rice prices are also high: between 2012-20, rice prices in Indonesia were, on average, more than double the rice prices in Vietnam, Myanmar, Cambodia and Thailand and about 25 percent higher than the prices in the Philippines²³. These result from the high costs of production, processing, and distribution; high food losses along the supply chain due to poor connectivity and inadequate logistics infrastructure; and restricted trade coupled with insufficient domestic production of some commodities. High expenditure for rice limits the ability of poor households to afford a more nutritious diet²⁴. While only 1.1 percent of Indonesians could not afford to consume sufficient calories in 2017, 34 percent could not afford a nutrient-adequate diet, and 68.8 percent could not afford a healthy diet.²⁵ High domestic food prices do not benefit most farmers, because two-thirds of Indonesian farmers are net buyers of food and therefore face inflated food prices themselves. COVID-19-induced financial shocks led to a high prevalence of food insecurity among households. The share of households experiencing food shortages and eating less than they felt they should nearly doubled to between 31 percent and 38 percent within a few months of the onset of the COVID-19 outbreak in the country.²⁶ This amplifies the need to enhance the efficiency and resilience of Indonesia's food system.

10. **While consumption patterns are beginning to shift to a more diverse range of food, particularly in urban areas, Indonesia's food supply system is slow to respond to market demand.** With rising incomes and urbanization, food consumption and expenditure patterns are shifting to higher-value and processed foods. Between 2007 and 2021, the consumption of beef, poultry and fish increased by 45 percent, while the consumption of cereals declined. Over the same period, the share of household expenditure for processed and prepared foods in urban food expenditure rose from 26 percent to 36 percent.²⁷ This trend of diversification of consumption is projected to continue in the future and will rely on well-functioning and resilient food supply systems. The food crop mix in Indonesia, still largely dominated by rice and oil palm, is not keeping up with the changes in consumer diets and preferences. Much of the rising demand in processed food is satisfied by imports, because agricultural policies²⁸ have

²¹ ILO. 2020. *Leading to Success: The business case for women in business and management in Indonesia*. Available at: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/publication/wcms_750802.pdf

²² <https://www.numbeo.com/cost-of-living/>.

²³ World Bank. 2020. *Indonesia Economic Prospects December 2020*.

²⁴ Ilman, AS. & Wibisono, ID. 2019. *Reducing Stunting through Trade Reforms: Analysis of Food Prices and Stunting Prevalence in Indonesia*. Center for Indonesian Policy Studies. Retrieved from <https://www.cips-indonesia.org/reducing-stunting>

²⁵ World Food Programme. 2020. *Strategic Review of Food Security and Nutrition in Indonesia: 2019–2020 Update*.

²⁶ World Bank. 2021. *Households' Exposure to, and Recovery from, COVID-19 Socio-economic Shocks in Indonesia: Insights from a Year of High-Frequency Monitoring*.

²⁷ World Bank staff calculation based on Statistics Indonesia consumption and expenditure data (2021).

²⁸ Indonesia provides the highest level of public support to agriculture among emerging and OECD economies. Agricultural support ("transfers") has been provided mainly in the form of market price support and subsidies to producers for various agricultural inputs. Fertilizer, irrigation and other subsidies have typically amounted to between half and three-quarters of central government spending on agriculture in recent years. These transfers have distorted incentives and technical choices at the farmer level towards targeted crops, particularly rice, contributing to limited diversification, innovation, and downstream value-creation. For a more thorough discussion, refer to Indonesia Economic Prospect, December 2020, World Bank.



not been well adapted for Indonesian farmers, manufacturers, and service sector companies to boost domestic production and processing.

11. **While the growing demand for a more diverse range of food products may present a significant opportunity for producers, processors, and other value chain actors, various binding constraints need to be addressed.** Labor productivity in Indonesian agriculture is low and is lowest in the staple food crops subsector. Factors affecting low productivity and profitability in the agriculture sector include a lack of market access by producers, limited adoption of improved technologies, limited access to extension services, infrastructure bottlenecks (including limited access to irrigation, rural roads, and other rural infrastructure), aggregation and product quality deficiencies, downstream logistics bottlenecks, weak food safety systems (especially for perishable products), inadequate value chain financing, and weak technical capacity and entrepreneurship skills. Poor agricultural practices also incur significant costs to the environment and increase vulnerability to climate change. Overuse of chemical inputs encouraged by the long-standing input subsidies threaten the long-term productivity of the agricultural sector and increase the susceptibility of crops to pests and diseases while increasing GHG emissions.

12. **The agricultural sector in Indonesia has suffered from the impact of climate change, but it has also been a major direct contributor.** Nearly 23,000 extreme weather events occurred between 1998 and 2018, which had severe implications for the agricultural sector. While a 12 percent increase in annual rainfall has been recorded between 1990 and 2020, projections indicate increasingly erratic rainfall patterns in the coming years. Annual rainfall is estimated to increase at the national level by 1–5 percent by 2100, but large variations per season are expected, including a 4.8 percent decrease in dry season rainfall. Heavier concentrations of rain are likely to exacerbate the impacts of flooding and landslides, while less frequent rains and a delayed monsoon season will worsen drought and forest fires in Indonesia. Increased temperatures will help spread pests and diseases that harm humans, crops, and livestock. In the coming decades, slow-onset climate shifts will decrease the crop suitability of several production systems. Agriculture, Forestry and Other Land Use (AFOLU) accounts for 48 percent of total national GHG emissions, and agriculture is one of the biggest drivers of land use change. Paddy (rice) cultivation accounts for approximately 5 percent, the livestock sector for approximately 3 percent, and food waste and loss accounts for another 7.3 percent of national GHG emissions, respectively. The transition to a low-carbon agricultural pathway, while contributing to improving farmer and consumer welfare and building resilience of the food system, is a much-needed priority agenda for the Government of Indonesia (GoI).

Greater public-private collaboration is required for equitable distribution of benefits across the value chain, and reduce its carbon footprint

13. **Greater public-private partnerships in agriculture can strengthen the inclusivity and sustainability of value chains.** Integrated value chains of multiple commodities, led by the organized private sector, have evolved in Indonesia over the past few years. Indonesia has a vibrant agribusiness sector comprising large multinational corporations, local large agribusiness companies, and MSMEs operating in multiple commodities. In the plantation crop sector, agribusinesses are directly engaged in the production of agricultural commodities through large-scale plantations while in other sectors, they are engaged as processors, buyers, input providers, logistics providers, and financiers. However, there are concerns that (a) many of these value chains can exclude smallholders' farmers, women, or marginal groups; (b) a focus on short-term profit maximization can have adverse consequences in terms of environmental degradation, pollution, and higher carbon emissions; and (c) they can at times contribute



to jobless growth. To help support smallholder inclusion, greening of supply chains, and job creation, there is a rationale for public sector intervention in strengthening value chains and in creating an enabling environment (including the development of critical infrastructure in remote/rural areas) to crowd in and coordinate private sector investments, as well as in setting the rules of the game for private sector participation.

14. **While several companies are already contributing to positive outcomes, critical public investments, and/or interventions are still needed in some key areas to deepen the private sector's participation in the agri-food system.** Findings from private sector consultations that took place during project preparation suggest that some private companies are often doing more beyond their core businesses and contributing to positive outcomes. To ensure a consistent supply of farm produce that meets market standards, many private companies engage in the provision of technical advisory services to farmers and are involved in the promotion of improved varieties and new technologies as well as in facilitating access to finance and inputs (for example, through partnerships and value chain financing). Supporting the implementation of good agricultural practices (GAP), used in international certification of product standards, can increase product competitiveness in global as well as domestic markets. Several companies train and hire members of local communities as field agents or agronomists, thereby creating rural off-farm employment opportunities, including for women, and contributing to the development of the value chain ecosystem in rural areas. However, several common bottlenecks were raised, including low farmer technical capacity and digital literacy, perverse incentives for the use of unsuitable agricultural inputs due to the ongoing fertilizer subsidies, limited rural infrastructure and agriculture facilities, inefficient supply chains, high logistics costs due to poor transport connectivity, limited access to finance of farmers and smaller enterprises in the supply chain, limited availability of locally adapted improved varieties particularly for high-value commodities, and lack of data on the agriculture sector. These are areas where the public sector could play a key catalytic role. The demand for stronger public-private partnerships has been articulated by central and local governments, smallholder farmers, farmer associations, and private sector actors who all see value in aligning and coordinating public and private resources to support the development of inclusive and sustainable value chains

15. **Digital agriculture is regarded as a game changer for Indonesia with agricultural technology (agri-tech) start-ups playing a major role.** 'Digital agriculture' is the use of digital technology to improve agricultural yields, efficiency, incomes, and profitability. It can help farmers—small or large—make better technical and market decisions and use their resources in a more productive and sustainable manner. Moreover, digital agriculture provides an opportunity to attract a new generation of millennial farmers and agri-entrepreneurs. The gains associated with new, low cost, and data intensive on-farm and off-farm digital technology applications in upstream, midstream, and downstream activities are potentially enormous. Indonesia has a vibrant and strong agriculture technology community—at least 55 agriculture-specific digital solutions already exist in Indonesia, developed by the private sector, at varying stages of maturity and scale. Despite the growth of agricultural technology start-ups, they face significant challenges for scaling up. These challenges include (a) high cost of data acquisition, (b) client acquisition challenges, (c) low technological and digital literacy level of farmers and consumers, (d) complex revenue models, (e) limited access to finance, (f) overall regulatory and business enabling environment, and (g) limited collaboration between the public and private sector.

Modernization of the agro-food system is a priority agenda for the Government of Indonesia (GoI)



16. **The project responds to the Gol's priorities that seek to diversify the country's food system by developing and strengthening higher-value and more nutrient-rich value chains.** The National Medium-Term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional*, RPJMN) 2020–2024 has highlighted nutrition, crop diversification, export market development, and farmer incomes as priorities. The MoA is adapting its programs accordingly, by prioritizing five key areas to support food system development: productivity enhancement, diversification, logistics, agriculture modernization, and export promotion. On exports specifically, the MoA is seeking to triple agriculture exports by 2024. Already, some horticultural products, such as mangosteen, mango, and snake fruit, are becoming leading export commodities.

17. **Strengthening digital technologies and approaches in agriculture and food systems is part of the MoA's strategy for the transformation of the sector.** The MoA would like to harness the potential of digital technologies to support decision-making in agriculture, as well as support farmer operations by improving their access to inputs, finance, and markets. The MoA has established the Agriculture War Room (AWR), a decision-support system and command center, which is envisioned to host and analyze a wide range of agriculture-related data (for example, climate, prices, production, and market) to generate actionable insights to support higher-level decision-making. Data fed into the AWR is expected include data collected through the *Kostratani* (Strategic Command for Agriculture Development) in over 5,000 subdistricts (expected to eventually cover all the 7,000+ subdistricts in Indonesia) by extension workers and other field officers, who in turn will act upon the insights generated by the AWR to support farmers. The MoA is exploring the integration of other ecosystem actors, including the private sector, into the platform. Other ecosystem actors may benefit from the rich information available to deliver services to farmers and in turn feed further data into the AWR.

18. **Over the past few decades, Indonesia has seen sizable investment in agricultural cooperatives and farmer groups.** According to the Ministry of Cooperatives and SMEs, there were 45,498 agricultural cooperatives operating in 2019. These agricultural cooperatives broadly fall into three groups—marketing cooperatives, agricultural supply cooperatives, and service cooperatives. However, these cooperatives face multiple challenges including limited commercial orientation, lack of professionalism, financial management challenges, and limited member proactive engagement, all of which limit their efficacy.

19. **To address challenges associated with small and fragmented land holdings, limitations with previous farmer cooperatives, and to make farming more profitable for smallholder farmers, the Gol has developed a *Korporasi Petani* ('Farmer Group Enterprises') program, which was identified and prioritized by President Joko Widodo as a 'major project' in RPJMN 2020–2024.** MoA Regulation No. 18/2018 on the Development of *Kawasan Pertanian*²⁹ based on the *Korporasi Petani* defines *Korporasi Petani* (KP) as a "farmer economic institution with legal status in the form of cooperatives or other types of legal entity, where the majority of the shares are owned by farmers." The KP concept revolves around mobilizing smallholder farmers into groups to form a farmer group enterprise such as a cooperative, a limited liability company, or another legal entity to benefit from economies of scale and ease their

²⁹ An agglomeration of agricultural production centers that exceed the minimum threshold for economies of scale for enterprise development and for effective management of sustainable regional development that are functionally interlinked in terms of natural resources, sociocultural conditions, production factors, and availability of supporting infrastructure (MoA Regulation No. 18/2018 on the Development of *Kawasan Pertanian* based on *Korporasi Petani*).



integration into value chains. The KP is envisioned to operate within designated agro-based clusters³⁰ termed *Kawasan Pertanian*. Through improved value chain integration, farmers are expected to benefit from enhanced access to input and output markets, finance, technology, and innovation. This, in turn, would enable farmers to diversify to produce higher-value commodities, improve crop/livestock productivity, and engage in value-adding activities—thereby leading to enhanced income. According to the RPJMN, the development of the KP should consider (a) the application of GAP and precision farming; (b) the strengthening of farmer institutions; (c) access to investment, financing, and insurance; (d) partnerships for MSMEs and entrepreneurship; and (e) market facilitation. Given the country's diverse geography, there is a need to identify suitable operational arrangements for the KP across a range of commodity-location combinations, which would enable farmers to benefit from its formation.

20. The GoI is committed to scaling up KPs and has targeted the development of at least 227 new KPs in the coming years. The Ministry of National Development Planning (*Badan Perencanaan Pembangunan Nasional*, BAPPENAS) is finalizing a presidential decree on KPs, and subsequently resources will be allocated by the Ministry of Finance (MoF) to relevant line ministries, including the MoA, to scale up the KP models.

Rationale for ICARE

21. The evolving opportunities and constraints facing the agriculture and food sector require an innovative set of integrated support measures. There is increasing recognition in the MoA to shift from a supply-driven to a demand-driven model. To respond to emerging demand from the markets, farmers need to make adjustments in their production systems and commercialization strategies and integrate more closely with the organized private sector. To help that transition, the MoA would need to change its role from a direct provider of goods, services, and assistance, to that of a facilitator. This facilitator function would focus on the crowding-in of the organized private sector, supporting partnerships between public and private sectors, integrating farmers into value chains, and providing core public services (such as basic agriculture extension, delivery of off-the-shelf technology, rural infrastructure, mobilization of farmers etc.) which are not being provided by the private sector. At the same time, the MoA is also transforming the research and development-focused Indonesian Agency for Agricultural Research and Development (IAARD) into an agriculture systems-focused institution that would be suited to focus on a market-based approach to technology dissemination.

22. Responding to the need to introduce a new farmer support model, ICARE has been designed to help operationalize a transformative approach involving value-chain-based partnerships and assist in adapting the MoA's institutional capacity to provide catalytic support to stakeholders. Building on IAARD's new role, ICARE would introduce a systems approach that incorporates market-led technology dissemination and value-addition as well as enhanced climate change adaptation and mitigation. Improving resilience to changing climate and reducing the carbon footprint of agriculture activities would require collective action by farmers, adoption of appropriate technologies and practices, greater integration of supply chains, and improved delivery of services by the private and public sector, which could be achieved through the KP model. The models being piloted by ICARE can provide ample learning

³⁰The FAO defines agro-based clusters as a concentration of producers, agribusinesses, and institutions that are engaged in the same agricultural or agro-industrial subsector, and interconnect and build value networks when addressing common challenges and pursuing common opportunities. (FAO. 2010. *Agro-based Clusters in Developing Countries: Staying Competitive in a Globalized Economy*. <https://www.fao.org/3/i1560e/i1560e00.pdf>).



opportunities to inform the design of other national programs aimed at enhancing food security, climate change adaptation and mitigation, as well as serve as an alternative to large-scale, state-led agriculture development projects, such as the ‘food estates’ project³¹.

23. **Over the past two decades, there is a growing momentum to professionalize farmer organizations in the form of corporations, farmers companies, and/or professional cooperatives across the globe.** In India, more than 5,000 farmer producer companies, some of them supported by the World Bank financed projects, have been created in the past two decades and the Government of India plans to create 10,000 new farmer producer companies by 2028. In China, the US\$140 million Guizhou Rural Development Project (P133261), financed by the World Bank, has created over 70 commercial farmers cooperatives. Similar projects to support producers’ organizations have been financed by the World Bank in India, the Philippines, Vietnam, and Latin America.

C. Relevance to Higher Level Objectives

24. **The proposed project fully aligns with the World Bank Group’s Country Partnership Framework (CPF) for Indonesia** for the period FY21–FY25 (Report No. 157221-ID), under objective 4.2: Improve agriculture and natural resources-based livelihood of engagement area 4: Sustain Management of Natural Assets, Natural Resource-Based Livelihoods, and Disaster Resilience. Three cross-cutting themes of the CPF—digitalization, gender, and climate change—are mainstreamed in this operation. By supporting smallholder farmers, comprising mostly the rural poor, this project will directly address the twin goals of the World Bank Group (WBG) of alleviating poverty and boosting shared prosperity. The project is well positioned to contribute to the to the World Bank East Asia and Pacific Region Climate Change Action Plan. The project adheres to the Green, Resilient and Inclusive Development (GRID) approach by supporting farmer’s collective active, district level agribusiness planning for resilient and green agribusiness development, and improved supply chain integration. The project will also align with the Bank’s commitment to a food system that contributes to healthy people, a healthy economy, and a healthy planet.

25. **ICARE is well-aligned with Indonesia’s national policy frameworks and high-level commitments.** The project is anchored in RPJMN 2020–2024. By supporting climate-smart agriculture (including transitioning land to lower-emission crops, improving water and land use efficiency, improving soil health, improving livestock feed management, promoting clean energy in agricultural supply chain, reducing food loss, and so on), this operation contributes to Indonesia’s NDC 2021 and Indonesia’s Long-Term Strategy for Low Carbon and Climate Resilience 2050.

³¹ In June 2020, President Joko Widodo announced the launch of a National Food Estate Project to boost domestic agricultural production to guard food security and support self-sufficiency goals. This has been depicted as a response to the sense of impending food crisis. The sense of food crisis itself has been invidiously related to warnings in the earlier stages of COVID-19 of possible disruptions in global food supply as well as instances of restriction of rice exports by a few countries in the initial weeks of the pandemic.



II. PROJECT DESCRIPTION

A. Project Development Objective

26. The Project Development Objective (PDO) is to support environmentally and financially sustainable and inclusive agricultural value chains in selected locations.

27. **Sustainability in the project context is defined by two attributes:** (a) environmental sustainability, wherein the project interventions will help improve resilience to climate change and minimize the carbon footprint, and (b) financial sustainability, wherein project interventions will demonstrate commercial profitability. Sustainability will be pursued through multiple means. The promotion of climate-smart agricultural practices and technologies is expected to help improve the production systems' productivity and resilience to climate change. In addition, farmer groups will be equipped with the key technical, managerial, and business skills required to manage a viable farmer enterprise/KP and engage in value chain partnerships. The institutionalizing of partnerships with multiple levels of government (national, provincial, and district) and the private sector is important to ensure that the relationships established will continue after the project ends. Inclusivity will be sought through integrating smallholders and agribusiness MSMEs into value chains and ensuring the participation of men and women farmers as well as youth in the project.

PDO-Level Indicators

28. **The achievements of the PDO will be measured through the following indicators:**

- Proportion of project-supported *Korporasi Petani* members with increased sales through commercial channels (Percentage)
- Percentage increase in productivity of selected crops and livestock³² from incorporating climate smart agriculture technologies amongst project beneficiaries (Percentage)
- Number of partnerships facilitated by the project (Number)
- Farmers reached with agricultural assets or services (CRI³³, Number)

B. Project Components

Project Approach

29. **To achieve the PDO, the project will develop transformative models of smallholder support that are demand led and market oriented and based on value chain partnerships.** At its core, the project seeks to pilot three core interventions: (a) development of KP models, (b) shift of the MoA from a direct delivery to a facilitation model, and (c) integration of the private sector in the delivery of goods and services to farmers. Models will be developed, fine-tuned, and operationalized for a selected range of

³² The determination of 2–3 key crops to be monitored will be determined in the early stages of project implementation. Crop productivity will be measured in terms of yield per hectare while livestock productivity will be measured in terms of yield of the various commercial outputs (for example, meat, dairy, and eggs) per livestock unit.

³³ CRI = Corporate Results Indicator.



commodity-location combinations. To ensure the integration of climate change adaptation and mitigation technologies and practices in the models, the project will foster large-scale, climate-smart technology adoption by farmers, promoting alternative crops to help farmers switch from paddy to lower GHG emission and higher value crops, deployment of intermittent irrigation to reduce emission from rice paddies, feed improvement practices for the livestock sector, improved soil health management, minimization of food loss, and use of alternative energy sources in the broader supply chains. Climate smart agriculture aims at supporting adaptation and mitigation and will include practices such as regenerative agriculture, conservation agriculture, low carbon agriculture, and restorative agriculture. The project would provide an opportunity to demonstrate the different yet complementary roles of public and private actors in value chain development. Lessons from the project would guide further replication and adaptation of successful models in other areas, as well as inform the design of other Government initiatives aimed at sustainably increasing agriculture productivity, improving farmer income, and enhancing food security.

30. **ICARE's design combines value chain development (Component A) with the strengthening of the country's agriculture innovation system to become more market driven (Component B) through public-private partnerships.** The project comprises three components; Annex 2 provides a detailed description. The geographic and commodity scope of the project is described in paragraphs 45 and 46. Project phasing and sequencing is discussed in paragraph 47.

31. **The project will include the incorporation of appropriate standards,** such as of Good Agricultural Practices (GAP), Good Manufacturing Practices (GMP), Good Processing Practices, Hazard Analysis Critical Control Point (HACCP), and ISO certification, among others, across all component and sub-components of the project.

Component A: Strengthening value chains in selected *Kawasan Pertanian* (agri-zone clusters) (Total: 64.39 million [IBRD: US\$55.29 million; Beneficiary:³⁴ US\$9.10 million])

32. **Component A will provide integrated and site-specific support for the development of viable value chain models in selected agri-zone clusters, an integral element of which is helping farmers better adapt to changing climate and reduce the carbon footprint of the selected value chains.** This will be achieved through the mobilization and strengthening of existing farmer groups and/or farmer cooperatives into farmer group enterprises or KPs. In addition, to strengthen the climate-smart value chain models, this component will align and mobilize public and private resources to cofinance critical value chain investments, including rural infrastructure as well as promote climate-smart and digital technological innovations to drive productivity enhancements, product diversification, and value addition. Recognizing the underrepresentation of women in farmer groups, Component A will specifically target existing women farmer groups (*Kelompok Wanita Tani*, KWTs) for inclusion in the project and support the formation of new dedicated KWTs.

33. **To fill gaps not met through partnerships, ICARE will finance complementary value chain investments through KP matching grants and competitive technology grants.** KP matching grants will be used to finance initial KP business needs as outlined in viable business plans. The competitive technology

³⁴ Beneficiary contribution assumes a minimum of 20 percent KP contribution for matching grants.



grants will finance the adaptation and collaborative dissemination of locally relevant gender-responsive climate-smart technologies.

Subcomponent A.1: Development of Kawasan Pertanian (agri-zone clusters) models and value chains (IBRD: US\$8.91 million)

34. Site-specific planning will take place in the first 18 months of project implementation. The planning process will follow a participatory approach and involve multiple stakeholders, including governments of different levels (central, provincial, and district), the private sector (including financial service providers and agribusiness small and medium enterprises [SMEs]), extension agents, and farmer groups. The development of the agri-zone cluster models and value chains involves the following steps.

- **Validation of project locations and beneficiaries and participatory assessments of existing value chains.** The project will organize consultations, workshops, and meetings, to validate the final list of villages that comprise each agri-zone cluster, potential farmer organizations (that is, farmer groups, farmer cooperatives, and other forms of farmer economic institutions) to mobilize into a KP, and project beneficiaries. Local value chain assessments will also be financed to identify and assess site-specific market opportunities (including through demand studies) as well as key areas for interventions based on existing gaps (that is, in infrastructure, technology, and skills) in each agri-zone cluster.
- **Development of agri-zone cluster agribusiness development plans and public-private sector stakeholder platforms.** To align public and private investments to support the development of climate-smart value chains in each location and building on the results of the value chain assessment, agribusiness development plans will be finalized for each agri-zone cluster. These plans will result in the development of memoranda of understanding (MoUs) between all the parties (public and private sector) involved, to outline the roles of each stakeholder and the cooperation mechanisms needed to operationalize the agri-zone cluster agribusiness development plans (for example, investments in rural roads, irrigation, electricity, agri-logistics, storage, and other rural infrastructure). Support will also be provided to establish public-private stakeholder platforms to enable coordination and joint action in value chain development.
- **Strengthening agriculture services for value chain support based on gaps identified in the agri-zone cluster agribusiness development plans.** These could include services such as (a) soil testing services to help rationalize fertilizer use, (b) disease identification service, (c) product quality assurance services (protein content, aflatoxin, mycotoxin, and so on), and (d) equipment calibration services.

Subcomponent A.2: Supporting the development of Korporasi Petani (Total US\$55.48 million [IBRD: US\$46.38 million; Beneficiary: US\$9.10 million])

35. This subcomponent will finance the following:

- **Developing farmer groups into KPs and strengthening their technical, business, financial, and organizational skills.** The project will facilitate the mobilization of existing farmer groups, including women and youth farmer groups, in selected project locations into KPs.



The project will adopt appropriate screening tools for determining eligible farmer groups and KPs to participate in the project matching grant schemes. Technical assistance (TA) and advisory support will be provided to existing farmer groups, including through third-party service providers, in establishing the organizational and governance structure, as well as obtaining the legal status for the new KP. The KP formation is a prerequisite for KP business plan development and KP matching grants financing and would therefore need to be completed within the first 18 months of the project to ensure sufficient time to realize project benefits. The newly formed KPs will receive TA and advisory support to strengthen their institutional capacity in managing the organization and business, including to produce goods that meet market requirements and add value, manage climate and market risks (such as through improved management practices, like irrigation water management, and incorporation of organic materials), and engaging in value chains. The support will include training on specific topics, visits to well-established farming and/or processing facilities, and exchanges with successful farmers enterprises or KPs, including those in other ICARE locations. As part of the TA to KPs, the project will also provide facilitation for the establishment of formal contracts between KPs and private agribusiness companies, in response to emerging opportunities.

- **Development of viable KP business plans.** Once formed, each KP will receive TA to develop viable climate-smart business plans, which align with the agri-zone cluster agribusiness development plans developed for each project location. The business plan describes the overall value chain arrangements, participant responsibilities and benefits, intended markets and how those would be reached, and the financing arrangements. Every KP business plan will be screened for climate change adaptation and mitigation, and activities that contribute to enhanced resilience and reduced emission will be prioritized.
- **Provision of matching grants to cofinance KP business plans.** KPs will be eligible to apply for matching grants to cofinance their KP business plan. The grant can cover expenditures such as goods, works, and training, specifically those supporting climate-smart-farm production as well as post-harvest and marketing operations. These may include energy-efficient small equipment and small-scale works (such as small building rehabilitation) for the storage, packaging, sorting, grading, and processing of agricultural produce; and marketing advisory services for market research and contract negotiation, transport, and shipment. KPs will be encouraged to practice improved agricultural management practices. The maximum amount for the KP grant is US\$700,000, with the KP and individual farmers expected to contribute at least 20 percent of the total cost of the investment (10 percent cash or in-kind contribution for women and youth groups). It is expected that at least 70 percent of the KP matching grant will contribute directly to climate change adaptation and/or mitigation. The competitive grants implementation arrangements including the eligibility criteria, negative list for financing, proportion of private sector matching contribution, and proposal evaluation process, and so on will be described in the KP Matching Grants Operational Manual.



Component B: Strengthening institutional capacity for value chain development (Total: US\$44.71 million [IBRD: US\$44.71 million])

36. **Component B aims to strengthen public and private sector institutional capacity to deliver on climate-smart agriculture and value chains in the targeted project locations.** The project will enhance the facilitation skills of relevant MoA and subnational governments (provincial and district) field staff to crowd in the private sector and build collaborative partnerships to enable large-scale adoption of climate-smart agricultural technologies. The project will identify currently available climate-smart innovations from both the public and private sectors that would be relevant for the development of value chains under Component A for further refining, adaptation, packaging, dissemination, and scaling up. The majority of resources under this component will be used to finance competitive grants to support collaborative technology adaptation, and infrastructure development, dissemination, and implementation, linked to the complementary investments financed by the KP matching grants under Subcomponent A.2, and beyond.

Subcomponent B.1: Collaborative dissemination of priority technologies through partnerships (IBRD: US\$39.71 million)

37. Building on experience from the recently completed World Bank-financed Sustainable Management of Agriculture Research and Technology Development (SMARTD, P117243) Project, this sub-component contributes to the acceleration of climate-smart technology adoption through public-private partnerships in technology dissemination, market-driven advisory services, and extension systems. This activity will focus on the dissemination of locally adapted climate-smart technologies, relevant to the local value chain plans developed under Subcomponent A.1 and the KP business plans under Subcomponent A.2. This subcomponent will finance the following: (a) competitive technology grants for collaborative technology dissemination and (b) support for the transfer and adoption of existing and market-relevant technologies. Gender-responsive technologies that support climate change adaptation and mitigation in agriculture will be prioritized.

- **Competitive technology grants will be used to promote the dissemination and adoption of priority climate-smart and digital technologies to support value chain development.** The grants will focus on the adoption and dissemination of relevant on-the-shelf technologies to support the development of selected value chains. Communication outreach will be undertaken to ensure relevant value chain actors are aware of the competitive technology grant. Proposals must incorporate elements of climate-smart agriculture. These may include drought- and flood-tolerant varieties, improved water management technologies, technologies that encourage the shift to clean energy alternatives along the value chains, climate smart infrastructure, improved agricultural management practices (e.g. tillage and organic material management), and climate advisory services, among others. Proposals that also include elements of digital technologies, reduction, and/or management of agricultural contaminants and waste, food safety, and control of zoonoses will be prioritized. Proposals that address constraints faced by women farmers and entrepreneurs and promote women's uptake of appropriately designed technologies will also be prioritized. The private sector, in partnership with academia, research institutes (government and nongovernment), and nongovernmental organizations (NGOs) will be invited to submit proposals that address challenges identified in the agri-zone cluster agribusiness development plans



(Subcomponent A.1) and relevant to the KP business plans (Subcomponent A.2). The maximum amount of each competitive technology grant is US\$150,000 and may be in the form of cash and/or in kind. Private entities are expected to provide a matching contribution. The majority of private sector contribution is expected to fall within 30–50 percent of the proposal value. Further details on the competitive grants implementation arrangements, including provisions on eligibility criteria, negative list for financing, proportion of private sector matching contribution, and proposal evaluation process, and so on will be elaborated in the Competitive Technology Grants Operational Manual.

- **Supporting the transfer and adoption of existing and market-relevant technologies.** This activity will include the establishment of demonstration plots for selected key technologies, onboarding of agribusiness MSMEs (for example, agri-kiosks) and other local value chain actors to support the dissemination and piloting of new technologies, equipment and infrastructure, and training for agribusiness MSMEs and farmers on the use of newly disseminated technologies. The project will also foster collaboration in digital agriculture between agri-tech start-ups and digital technology providers with local governments and the public agriculture innovation and extension systems to adapt, test, and integrate existing digital solutions in selected value chains. The project will support mainstreaming digital agriculture interventions in the project through public-private partnerships with digital agriculture technology providers in integrating and scaling up existing solutions in relevant value chains.

Subcomponent B.2: Institutional capacity building (IBRD: US\$5 million)

38. To support the implementation of the agri-zone cluster agribusiness development plans, the project will strengthen the capacities of value chain actors (for example, MSMEs, start-ups, and processors) and financial institutions to engage in value chain partnerships and public sector personnel (technical staff of the MoA, relevant provincial and district governments, and extension workers) to facilitate the development of such partnerships and deliver public services in agriculture. The content of trainings and types of public services delivered should align with the agri-zone cluster agribusiness development plans. This sub-component will finance the following:

- **Strengthening the capacity of value chain actors** (micro-, small- and medium-scale agribusiness enterprises, including specialized technical service providers, input dealers, product aggregators, processors, traders, and commercial financial institutions) to support better value chain integration. The project will support trainings on a variety of topics (for example, efficient production and processing technologies, business and financial management, marketing, and the use of digital tools), the provision of advisory services to entrepreneurs in establishing enterprises, facilitation of dialogues with potential partners, and visits/exchanges to well-established agribusiness firms/facilities. This support will also include working together with commercial financial institutions to better deliver financial services (that is, credit, savings, and insurance) to farmers, KPs, and other value chain actors, to enable them to adopt practices and make investments to enhance value addition and climate resilience. This will be achieved through (a) training for financial institutions on topics such as agribusiness proposal evaluation, risk management, and value chain financing; (b) training facilitated by financial institutions to value chain actors on loan proposal



development, financial management, and managing risks through financial products; and (c) TA to facilitate development of value chain financing arrangements.³⁵ Trainings would also target women-led agribusiness MSMEs and/or household industries that typically engage in the post-harvest processing of agricultural products.

- **Training for public sector personnel**, including staff of the MoA and related ministries, subnational governments, and extension workers. This will include, among others, (a) training for government staff to enhance their capacity in facilitating local agriculture value chain development and agriculture finance (including in facilitating value chain financing arrangements) and (b) training of trainers, including internships and apprenticeships in the private sector, with a focus on enhancing the capacity of extension staff and other local technical staff to support the agricultural and food production systems and value chains at the subnational level. The latter will include training for women facilitators, to deliver training for women farmers and value chain actors, in locations where cultural norms require such arrangements.

Component C: Project management (Total US\$10 million [IBRD: US\$0; Gol: US\$10 million])

39. **Component C** will finance project management and facilitate learning and knowledge management to ensure that successful models developed by the project are well documented to support scaling up. This component will cover the following activities:

- (a) **Project management.** Coordination; implementation; financial management; procurement; environmental and social risk management; and monitoring at the national, province, and district levels.
- (b) **M&E.** A project-level M&E system will be established as part of the project's management structure with a robust management information system (MIS), including geographic information system (GIS) capabilities (for example, Geo-Enabling Initiative for Monitoring and Supervision [GEMS]). It will also include clear and transparent performance assessments of KPs.
- (c) **Knowledge management for scaling up and mainstreaming**, to document processes, approaches, and lessons derived from the development of KP models and implementation of climate-smart agricultural practices; as well as facilitate knowledge exchange to support the Gol's objective of scaling up successful KP models at a national scale, while promoting practices and technologies that enhance the agriculture sector's resilience to climate change and reduce its emissions footprints. This activity will finance studies/assessments to evaluate models developed by the project, as well as the preparation of policy briefs/reports, workshops/learning events, and other communication materials to disseminate findings to a wider audience. This would also include activities to incentivize competition, good performance, and learning among farmer groups and KPs (including, for example, around the adoption of climate-smart agricultural practices and digital technologies, successful business models, KP management best practice) such as organizing annual KP meetings to showcase success stories; peer-to-peer, and cross-country exchange

³⁵ Items (b) and (c) will also be delivered to farmers.



and learning event/visits; creation of a KP community of practice; communication channels, and materials including social media.

40. **Table 1 compares the KP matching grants and competitive technology grants.**

Table 1. Comparison of KP Matching Grants and Competitive Technology Grants to Be Provided by the Project

	KP Matching Grants	Competitive Technology Grants
Objective	To finance the initial investment needs of KPs based on viable business plans to enhance value addition and climate resilience as well as enable integration to value chains. May be used to finance commercialization of agriculture, including enhanced production, processing, and marketing; assets and incremental inputs needed for adoption of GAP; technologies to support climate change adaptation and mitigation in agriculture; and gender-responsive practices/technologies.	To finance adaptation, scaling-up, and dissemination of locally relevant technologies to support climate change adaptation and mitigation in agriculture and gender-responsive technologies, including digital technologies. Technologies should be relevant to the agri-zone cluster agribusiness development plans developed in each location, as well as <i>Korporasi Business</i> plans.
Beneficiary	KPs	Academia, research institutes (government and nongovernment), and the private sector
Form of support	Cash and/or in kind	Cash and/or in kind
Estimated number of grants	50–70	150–200
Grant size	The majority of the grants is expected to be US\$200,000–700,000 per grant.	Up to US\$150,000 per grant
Matching component	Minimum 20 percent KP contribution, can be in kind and may include costs of inputs, labor, and machinery. Details will be further elaborated in the Business Matching Grants Manual.	Private entities are expected to cofinance the proposal. The majority of private sector contribution is expected to fall within 30–50 percent of the proposal value.

41. **Given its demand-led and market-oriented nature, the project will embed a degree of flexibility in its design, to ensure that project beneficiaries would be in the best position to respond to emerging market opportunities.** Acknowledging that markets are dynamic and given that the project will cover a wide range of geographies and value chains, ICARE will adopt a demand-driven approach where activities, investments, and suitable KP models will be decided and adjusted as needed through a participatory approach involving local stakeholders. ICARE will support the preparation and financing of KP business plans, which will be specific to the context, location, and value chain. Technologies disseminated, trainings provided, and facilities established will be based on the specific needs of farmers, KPs, and value chain actors in responding to demonstrable market opportunities in selected project locations.

42. **The project will work with a variety of private sector actors, from local agribusiness micro-, small- and medium-scale agribusiness enterprises (MSMEs) to national and multinational private companies.** ICARE will leverage existing local business networks as well as explore new partnerships to cofinance value chain investments and activities as outlined in the agri-zone cluster agribusiness development plans. During the project preparation process, extensive consultations were held with



International Finance Corporation (IFC) and private sector companies (including a few existing IFC clients and a few potential clients). Two potential collaboration opportunities were identified: (a) the project could sign MoUs with existing IFC advisory and investment clients and (b) IFC has existing products (for example, tools to support cocoa/coffee productivity improvement and financial products) which would be scaled up and delivered to ICARE beneficiaries. The specifics of the collaboration with private companies and IFC will be elaborated during the implementation of ICARE.

43. **Women in agriculture in Indonesia face many constraints with respect to access to resources, services, and economic opportunities.** To address these constraints and empower women farmers and other female agricultural actors, ICARE will support the capacity strengthening of KWTs, promote increased women's representation in management positions within these groups, support women's participation in technical dissemination activities and uptake of agricultural technologies, and ensure women's participation in trainings that are designed to accommodate women's voices and needs. The project incorporates specific activities and sets target indicators to ensure progress toward reducing these gaps are measured and evaluated.

Geographic and Commodity Focus

44. **Project locations and value chains have been identified by the MoA, primarily targeting high-value subsectors (horticulture, livestock, and estate crops).** The MoA has identified a maximum of 14 potential agri-zone clusters across nine districts in nine provinces to be supported by the project. Each cluster is a geographically contiguous unit comprising 10–25 villages. Of these 14 clusters, 9 are indicated to be single commodity clusters and 5 indicated to be integrated clusters (that is, comprising two commodities). Each district will select a maximum of two commodities. Table 3 presents a summary of 14 clusters where the project will be implemented. Corresponding to each cluster, one KP will be established. To help coordinate the project activities in the cluster, the project will recruit a cluster coordinator. Each KP will develop business plans, and the project envisages supporting approximately 50 to 70 business plans. To ensure performance-based processes, upon successful completion of the first KP business plan, the KP may apply for project financing for the second business plan. Each KP can submit multiple business plans in a phased manner over multiple years.

45. **The selection of proposed agri-zone clusters and value chains was determined based on a number of criteria,** including economic and financial viability of the proposed product, the presence of market opportunities and existing supporting infrastructure, availability of existing farmer organizations and farmer capacity, as well as the potential for cofinancing by beneficiaries, local government, and private sector partners. Agri-zone cluster agribusiness development plans developed in the first 18 months of the project will determine which locations will continue to receive project support in subsequent years. More specifically, the agri-zone cluster agribusiness development plans will identify a subset of villages that comprise a particular agri-zone cluster for the project to focus on. The project seeks to develop models that will respond to the universal need of establishing market links for farmer groups, based on public-private partnerships. This need is location and commodity agnostic, and thus the overall demand-driven approach should be scalable across different commodity-geography combinations, although adaptations would be needed to adjust the finer details to meet the specific needs of the different value chains in selected locations. To ensure equity, the allocation of resources across project locations will be based on (a) the needs of specific value chains and (b) performance. Production of each



commodity will be based on improved management options (ranging tillage practices, organic amendments), which vary from one commodity and region (see annex 5, table 5.1).

Table 2. Indicative List of Agri-zone Clusters to Be Supported by the Project

No.	Agri-zone Cluster	Province
1.	Tanggamus Integrated Coffee - Goat Cluster	Lampung
2.	Garut Potato Cluster	West Java
3.	Garut Sheep Cluster	
4.	Brebes Integrated Lowland Rice ^a - Banana Cluster	Central Java
5.	Pasuruan Maize Cluster	East Java
6.	Pasuruan Mango Cluster	
7.	Sambas Upland Rice ^b Cluster	West Kalimantan
8.	Sambas Citrus Cluster	
9.	Central Lombok Maize Cluster	West Nusa Tenggara
10.	Central Lombok Chicken Cluster	
11.	North Minahasa Integrated Coconut - Maize Cluster	North Sulawesi
12.	Gowa Dairy Cattle Cluster	South Sulawesi
13.	Gowa Potato Cluster	
14.	East Kolaka Integrated Cocoa - Cattle Cluster	Southeast Sulawesi

Note: a. Also called wetland rice, is rice grown on land that is flooded or irrigated.

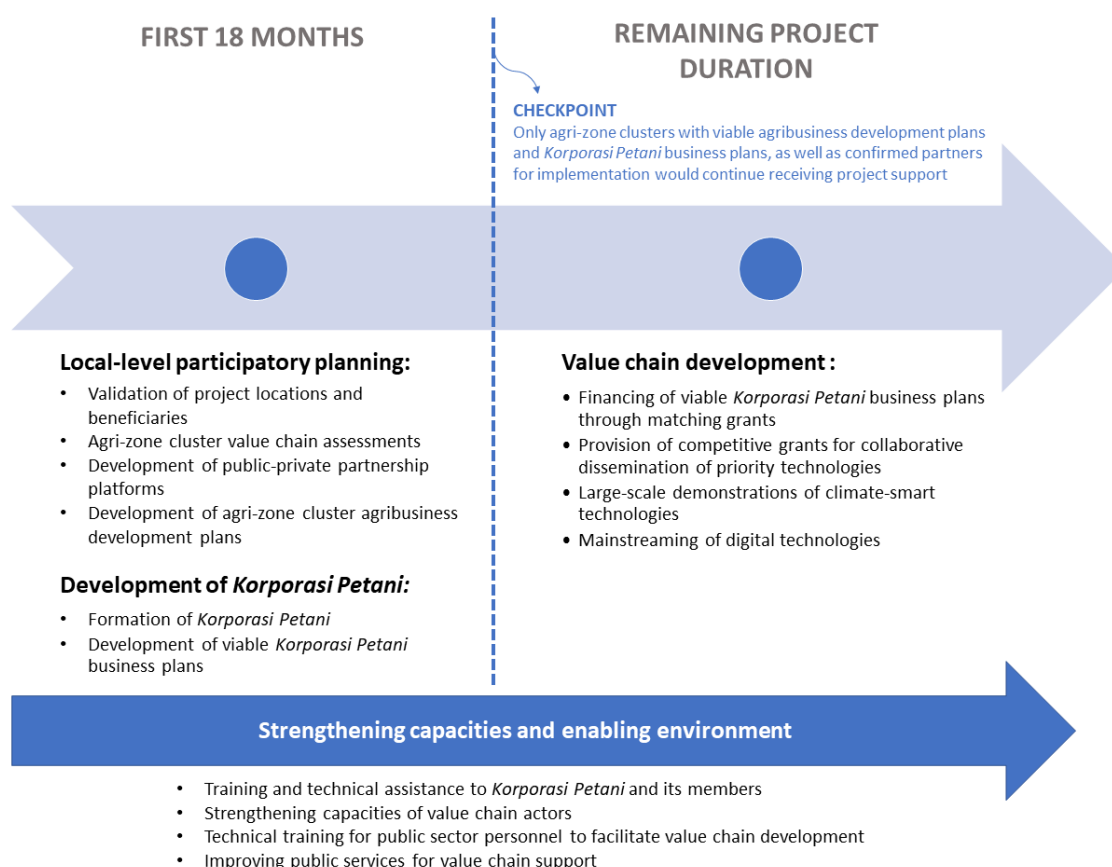
b. Rice grown in rainfed, naturally well-drained soils without surface water accumulation or irrigation.

Project Sequencing and Phasing

46. **Local planning processes will be an important first step in determining the value chain and geographic areas supported by the project.** During the first 18 months of implementation, agri-zone cluster agribusiness development plans as well as KP business plans will be developed in consultation with relevant stakeholders including local governments, financial institutions, the private sector, and farmer groups, including women and/or youth farmer groups. Only agri-zone cluster agribusiness development plans and KP business plans that meet the jointly agreed criteria, and therefore deemed viable, will proceed to implementation stage to be financed by the project (figure 1). Plans that do not qualify may be revised to meet the selection criteria and resubmitted. Agri-zone cluster agribusiness development plans and partnership opportunities identified in the first 18 months will inform the scope of project activities in the following years. Agri-zone clusters which are unable to meet the criterion of the first 18 months will not continue to receive project support.



Figure 1. ICARE Implementation Sequencing



Cross-cutting Elements

47. In addition to the abovementioned project components, a number of cross-cutting elements will be incorporated in the design and implementation of individual activities, which would include the following:

- (a) **Economies of scale and network effects.** To enhance competitiveness of agro-enterprises, the project will facilitate the crowding-in of investments in certain geographical clusters (*Kawasan Pertanian*) to enable economies of scale and network effects. The objective will be to establish well-functioning and coordinated production and enterprise clusters in collaboration with the private sector. Investments in these clusters will be made in upgrading infrastructure for agricultural trade and to enable producers and other value chain participants to access new markets. These clusters will be developed in close coordination with the private sector using the producer-market alliances approach. Under this approach, smallholder producers will transition to a demand-led production system by forming alliance with the private sector.³⁶ These alliances will enhance access to markets by

³⁶ World Bank Group. 2016. *Linking Farmers to Markets through Productive Alliances: An Assessment of the World Bank Experience in Latin America*. World Bank, Washington, DC. <https://openknowledge.worldbank.org/handle/10986/25752>.



developing subprojects that promote business partnerships between producers and the private sector.

- (b) **Private capital mobilization.** ICARE is expected to leverage significant financial investments from farmers and other value chain actors to contribute to the PDO. Farmers who are members of KP will contribute 20 percent of the financing needs of the business plans. The project aims to mobilize appropriately US\$9.10 million of financing from the farmers. In addition, the MoU developed during the preparation of the agri-zone cluster agribusiness development plans, will serve as a basis to mobilize additional private capital to support the project.
- (c) **Convergence with existing central and subnational government programs.** The GoI has put in place a wide array of public sector programs aimed at improving the diversity and productivity of agricultural production systems, enhancing farmer access to finance, promoting agricultural value addition, and achieving food security, which would complement the activities supported by this project. In addition, district governments that employ key last-mile service delivery of the departments would be an important partner, and efforts will be made to collaborate with other levels of local governments, especially the village government. This collaboration will ensure that the project activities are demand driven and in sync with the demands of the community.

C. Project Beneficiaries

48. **The direct beneficiaries of this project will be farmers organized into groups, particularly KPs and its members and other value chain actors in the selected project locations.** It is expected that the project will directly support and benefit around 17,700 farmers who will be organized into farmer group enterprises/KPs as well as reach at least another 72,300 farmers in the project locations who may benefit from trainings or investments made in the value chain in the project area, including improved market access and information.³⁷ Farmers within the same district who are not members of the KPs but benefit from the improved agricultural facilities, infrastructure, and partnerships; consumers; laborers in processing facilities; and other stakeholders would be indirect beneficiaries. Furthermore, other relevant value chain actors of the selected commodities in the project locations will also benefit, including input service providers, aggregators, processors, and other value chain intermediaries. The project will also target KWTs and women-led agribusiness MSMEs and household industries, which are often engaged in the post-harvest processing of agricultural goods.

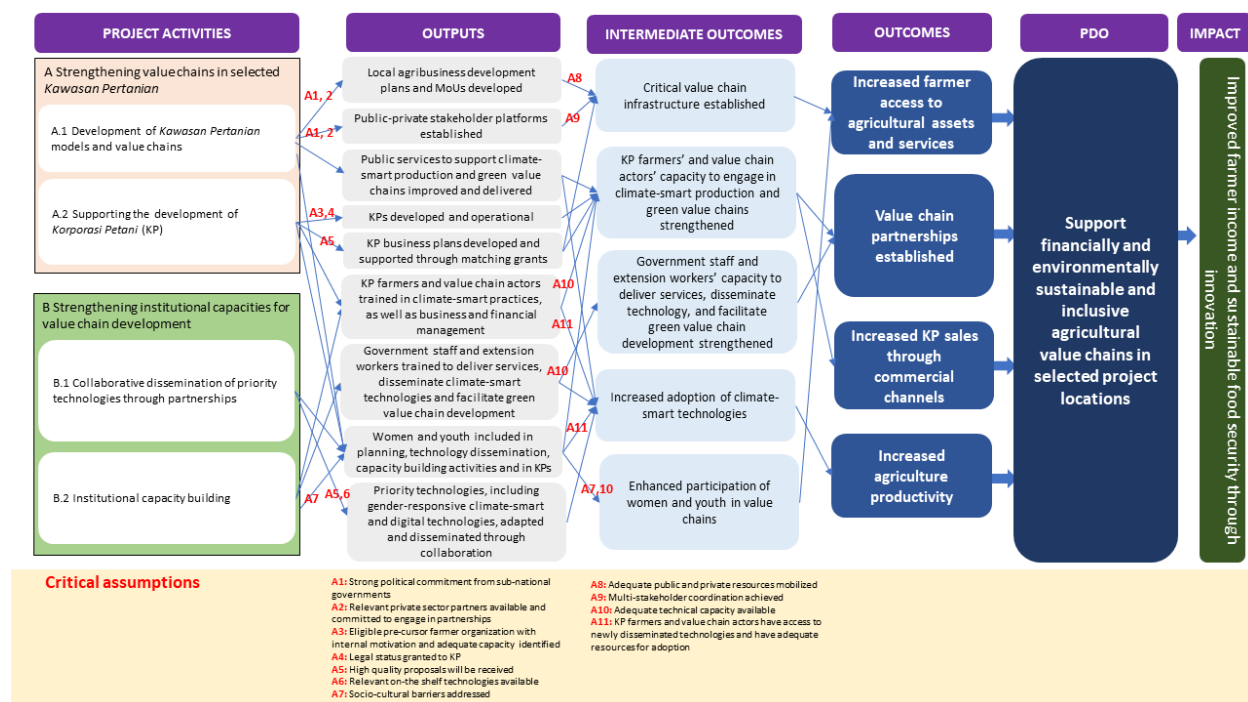
49. **Selection criteria for direct beneficiaries will be outlined in the Project Operational Manual (POM) and validated during the local-level planning stage in the first year of the project, in consultation with relevant stakeholders.** The project will work with existing farmer organizations (for example, farmer groups, farmer group associations, and/or farmer cooperatives) in the selected agri-zone clusters that meet the following criteria: (a) registered in *Simluhtan* (farmer registry) and the District Agriculture Office, (b) active in carrying out collective activities, (c) having a Memorandum and Articles of Association (AD-ART) as well as an operational organizational structure, (d) engaged in the production of the selected commodities, and (e) willing to participate in trainings and open to adopting relevant new technologies.

³⁷ PDO indicator 4: Number of farmers reached with agricultural assets or services = 90,000.

D. Results Chain

50. The overall project design is guided by the theory of change outlined in figure 2.

Figure 2. Theory of Change



E. Rationale for Bank Involvement and Role of Partners

51. **Rationale for World Bank involvement.** The core agenda of the project would be around agriculture modernization and commercialization. An integrated approach is currently missing, and the MoA recognizes the World Bank's ability to draw from international good practice experience and package a set of activities that would otherwise not be designed and implemented (nor funded). The project would act as a catalyst and the integrated development approach would become a model to be scaled up and mainstreamed into the Government's regular programs. The World Bank is well placed to support the country in undertaking this shift for several reasons. The World Bank has global experience in supporting agricultural commercialization programs. It has the capacity to work across multiple sectors and bring knowledge on policies and strategies to expand market access, mitigate market risks, and enhance private sector participation. With its global commitment and matching investments in mitigating the impacts of climate change, the World Bank is also well placed to support the Government's efforts to build climate resilience and enhance resource efficiency in agricultural value chains.

52. **Role of partners.** The project seeks to demonstrate the value of a partnerships-based model for value chain development. To ensure that the project's modest resource envelope would not hinder the attainment of the PDO, the project will work with a wide range of stakeholders and build on existing complementary initiatives. In delivering its activities, the project will partner with the Central



Government, subnational governments, the private sector, financial institutions, academia and research institutes, civil society organizations, and other international development partners (International Fund for Agricultural Development [IFAD], Islamic Development Bank [IsDB], Asian Development Bank [ADB], *Deutsche Gesellschaft für Internationale Zusammenarbeit* [GIZ], FAO, and Australia Department of Foreign Affairs and Trade [DFAT]³⁸). These partners will be an important source of technical knowledge, innovation, and cofinancing. The project will identify points of synergy with complementary initiatives in the selected locations to prevent duplications, fill gaps, and ensure an optimal use of resources.

F. Lessons Learned and Reflected in the Project Design

53. **Organized private sector involvement is essential for sustainable agricultural development.** International and domestic experience suggest that agricultural development projects are complex and, therefore, require a wide range of stakeholders for successful implementation. The private sector can supplement limited public funds while sharing the risks associated with investing in agricultural value chains. Private firms can also be used to leverage innovations for addressing obstacles along the value chain related to agronomic data, weather forecast, markets, and credits. Agricultural development initiatives are more likely to succeed when the Government plays a facilitator role and strengthen the enabling environment. ICARE will work closely with the private sector (including large companies, MSMEs, financial institutions, business associations, and so on) and will seek to address key challenges raised by the private sector by facilitating public-private sector dialogues at the local level and mobilizing complementary investments from subnational governments.

54. **ICARE will build on experience of the successful multi-stakeholder partnerships approach from the Closed-Loop Horticulture Pilot Project initiated by the Indonesia Chamber of Commerce (*Kamar Dagang dan Industri Indonesia, KADIN*).** There are often multiple streams of resources, whether from public or private sources, that flow to the local level but are disconnected from one another. Value chain development would require different value chain actors and the Government to come together and make complementary investments in infrastructure, new technologies, services, and farmer capacity. The Closed-Loop Horticulture Pilot Project developed an MoU to mobilize and coordinate resources from 14 public and private partners, including the Coordinating Ministry of Economic Affairs, MoA, Indonesia Central Bank, the provincial and district governments, Mercy Corps, Syngenta, PT. IndoFood, IPB University, and a number of local agricultural technology start-ups, to develop a market-driven value chain ecosystem around the Fresh From Farm (EPTILU) farmer cooperative in Garut District, West Java. The pilot serves as a proof of concept of how multiple stakeholders could work together and pool resources, as outlined in the MoU, to provide the necessary services and market links to support the integration of a farmer cooperative into the value chain. The pilot, however, only included 20 farmers and is led by youth. ICARE seeks to extract and adapt lessons from the experience and scale the approach to target a larger number of farmers. ICARE will develop a multi-stakeholder MoU to operationalize the agri-zone cluster

³⁸ Among others, ICARE will seek synergies with IFAD-IsDB Integrated Farming Systems in Upland Areas (UPLANDS) project in Kab. Garut, West Java; GIZ Coffee+ Project in Kab. Tanggamus, Lampung; ADB Horticulture Development of Dryland Areas Project; FAO Technical Cooperation Programme (TCP) on Digital Agriculture and Digital Villages Initiative; and DFAT Australia-Indonesia Partnership for Promoting Rural Incomes through Support to Markets in Agriculture (AIP-PRISMA) Program through complementary investments in overlapping project locations and value chains as well as knowledge exchanges between districts with similar/complementary value chains.



agribusiness development plans as a way to coordinate public and private investments and promote youth participation in the project.

55. **Commodity and site selection should be guided by market demand, as well as geographic and agro-ecological suitability, to ensure long-term economic viability.** High logistics costs to its market in Java as well as limited availability of supporting infrastructure and facilities reduced the competitiveness of maize produced in Merauke Integrated Food and Energy Estate. The unsuitability of peatlands for rice cultivation in the Mega-Rice Project had led to low yields and/or high production costs. In addition, experience suggests that although monoculture might be economically viable in the short term, the high environmental cost and eventual decline in productivity make it an unsustainable approach to improve agricultural productivity and/or food security. Therefore, initiatives should promote diversification into high-value agricultural commodities, livestock, and/or aquaculture which has proven to have more long-term net benefits. ICARE will focus, among others, on the value chain development of high-value commodities such as livestock, horticulture, and estate crops.

56. **Local communities should be actively involved at every stage of the project cycle to encourage buy-in and ownership.** Agricultural development programs should ensure that smallholder farmers have equitable access to project benefits and receive fair compensation for their natural resources. ICARE will follow a demand-driven approach to ensure that benefits provided by the project align with the needs of specific value chains. The local planning and business plan development processes would be a key instrument to ensure this, as well as to encourage stakeholder buy-in and ownership.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

57. **The executing agency for this project is the MoA of the Republic of Indonesia, with IAARD serving as the leading implementing agency.** A Project Management Unit (PMU) has been established under the IAARD Secretariat, and the PMU is staffed with people having experience in the previous SMARTD project. The PMU will manage the day-to-day project operation, with technical staff to coordinate project activities. The PMU will be supported by technical consultants for the implementation of Components A and B, such as in the value chain development and entrepreneur development activities, as well as to support project management in monitoring and evaluation (M&E) and procurement.

58. **At the subnational level, Project Implementation Units (PIUs) have been established under the Assessment Institutes for Agricultural Technology (AIATs) in each project location,** which would be responsible for coordinating project implementation in the respective project location. Each PIU will collaborate with relevant institutions at the provincial and district levels, including with other potential partners such as financial service providers, input suppliers, processors, and off-takers. Each PIU will report the progress of project implementation to the PMU periodically.

59. **Relying on AIATs as the vertical structure of IAARD to implement the project at the local level would strike a good balance between coordination across locations and local ownership.** ICARE will not adopt the on-granting mechanism to channel resources to the subnational level, but will rather leverage on the vertical units of IAARD present at the provincial level—namely the AIATs. The direct reporting



relationship between the AIATs to IAARD would ensure strong coordination and learning between different project locations, particularly as the proposed locations cover a broad geography. Given the model development nature of this project, which spans across a diverse set of commodity-location combinations, strong coordination and communication between project locations would be key to ensure that good practices and partnership practices are shared regularly to be replicated in other locations.

60. **To support the PMU and PIUs, in project implementation, a National Steering Committee (NSC), responsible for overall policy guidance and the coordination required between government institutions at the national level has been established.** According to the existing GoI convention, membership of the NSC should include all GoI units relevant to the project to strengthen ownership of, and effectively implement, ICARE activities. The NSC is chaired by the Secretary General of the MoA with membership adopting a two-tiered system. Core NSC members comprise of the: (a) Director of Food and Agriculture, BAPPENAS; (b) Director of Debt Management, MoF; (c) Director of Planning Bureau, MoA; and (d) Executive Secretary of IAARD. In addition to the core members, the NSC also include ex officio members who will attend meetings on an ad hoc basis. These include representatives from IAARD national and commodity research institutes, other Echelon I units of the MoA,³⁹ and the private sector, as represented by KADIN. The NSC will formally convene on an annual basis, where attendance could be delegated to personnel from the same unit in case of absence of the primary member. Additional meetings on specific topics and/or value chains may be held to seek guidance from relevant NSC members on a case-by-case basis.

61. A **technical team** has been established by the Director General of IAARD to provide technical support to the PMU and AIATs in the implementation of activities under Component A. The technical team comprise of various experts from IAARD national research institutes and commodity research institutes. Relevant IAARD research institutes will work with AIATs to adapt and disseminate technologies relevant for the selected value chains, for example, to climate-proof and enhance the responsiveness of the selected mango value chain to market demand. The technical team will work under the guidance of the NSC.

62. To assist in the delivery of project activities at the local level, a **cluster coordinator** will be appointed for each agri-zone cluster by the PIU and will be responsible for coordinating project activities and its delivery at the agri-zone cluster level with a consortium of partners, which will comprise of different stakeholders, including the provincial and district governments,⁴⁰ private sector, farmer representatives, and other value chain actors. Where appropriate, PIUs will hire **third-party service providers** (either firms and/or individual consultants) to support delivery of project activities (for example, providing training and technical assistance to KP and its members, facilitating value chain assessments

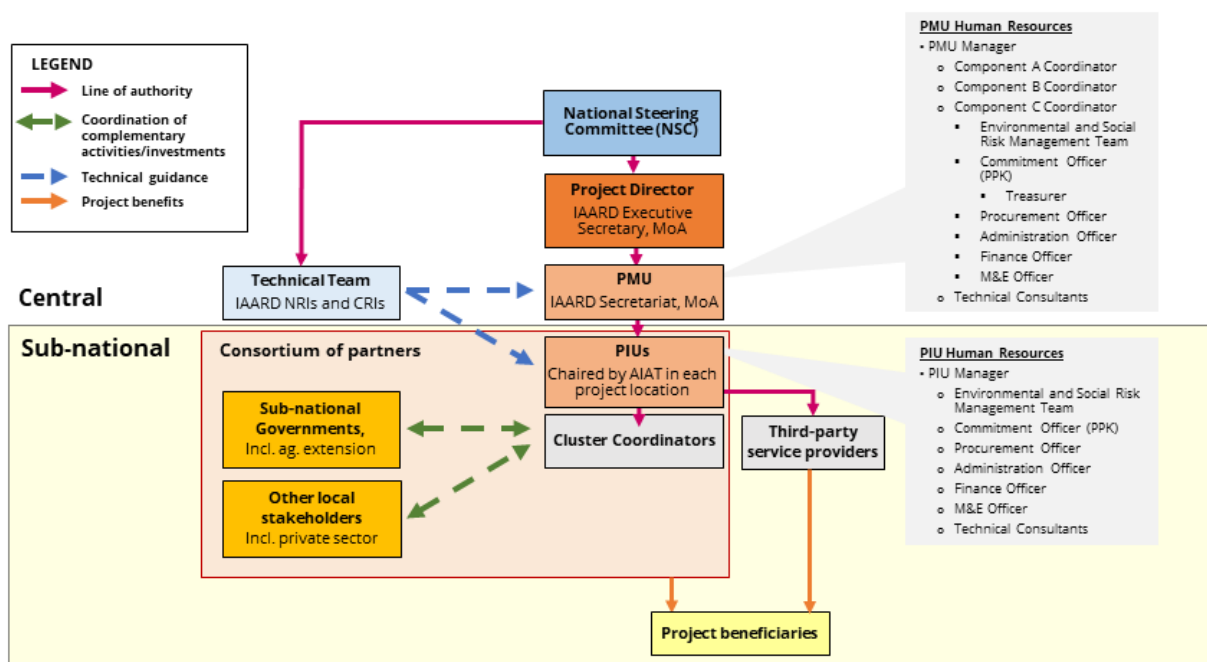
³⁹ Namely (a) Director of Indonesia Center for Horticulture Research and Development, IAARD; (b) Director of Indonesia Center for Estate Crops Research and Development, IAARD; (c) Director of Indonesia Center for Animal Research and Development, IAARD; (d) Director of Indonesia Center for Food Crops Research and Development, IAARD; (e) Inspector III, MoA; (f) Director of the International Cooperation Bureau, MoA; (g) Executive Secretary of Directorate General of Horticulture; (h) Executive Secretary of Directorate General of Livestock and Animal Health; (i) Executive Secretary of the Directorate General of Food Crops; (j) Director of Agricultural Financing of the Directorate General of Facilities and Infrastructure, MoA; (k) Executive Secretary of the Directorate General of Estate Crops; (l) Executive Secretary of the Food Security Agency; and (m) Executive Secretary of the Agency of Agricultural Extension and Human Resources Development (AAEHRD).

⁴⁰ This includes technical teams comprising relevant subnational government working units appointed by the respective provincial and district governments to support coordination and encourage complementary investments for ICARE implementation.



and agri-zone cluster agribusiness development plans development, facilitating the KP business plans development, and so on).

Figure 3. Organizational Chart for ICARE Implementation



63. **Citizen and stakeholder engagement.** ICARE requires and promotes continuous and meaningful consultation with individual farmers, farmer groups, and local private and public sector stakeholders. The project will use different techniques, from participatory rural appraisals and informant and household interviews to focus group discussions, to ensure that the needs of different groups of beneficiaries are being addressed and their voices heard. It is understood that meaningful consultation goes beyond the disclosure of information: it is a two-way process, designed to receive feedback from project beneficiaries that will inform the design and implementation of the project. Stakeholder engagement will be facilitated and reported on by project staff and extension workers. The process of citizen engagement and farmer consultation informing the design of KP business plans and agribusiness plans will not only help ICARE close the feedback loop but also ensure sustainable use of project investment and stewardship. During the agri-zone cluster agribusiness development plan process, citizens who are non-project beneficiaries residing within the agri-zone clusters will also be consulted. The resulting agribusiness development plan will then be disseminated and communicated to the local communities. Further, the proposed grievance redress mechanism (GRM) and the MIS are complementary tools that ensure appropriate and timely feedback.

B. Results Monitoring and Evaluation Arrangements

64. **The M&E system will be managed and implemented by the PIUs** coordinated by the ICARE PMU, supported by an M&E specialist. M&E activities will include (a) discussion and consultation of activity plans during the planning stage, (b) semiannual and annual reporting and/or field verification during the



implementation stage, and (c) impact assessment studies during the post-implementation stage. An M&E workplan detailing all M&E-related activities, with relevant timing, costing, and responsibilities will be included in the POM to guide the team for planning and conducting all necessary M&E activities.

65. **A project MIS will be established by the PMU.** Given the geographic and sectoral spread, there is a need to monitor activities closely to ensure implementation is on track. Therefore, a robust GIS-enabled project MIS (that is, GEMS) will be used that is online, accessible to the public, updated in real time, and linked to the GRM.

C. Sustainability

66. **Institutional sustainability.** The institutional sustainability of the project will depend primarily on ownership, buy-in, and capacity building of the executing agency, participating public and private institutions, and beneficiary communities in project intervention areas. The project builds upon successful experience of other projects in Indonesia and has incorporated key lessons from other projects to ensure institutional sustainability. The project is anchored on the key GoI priorities, is demand led, adopts a commercial approach, is focused on link and institutional coordination, and invests in capacity building, to ensure institutional sustainability.

67. **Financial sustainability.** The project will support the financial sustainability of KPs by strengthening the business management and financial skills of its members, and by supporting KPs in establishing value chain partnerships with the organized private sector and commercial financial institutions, that is expected to last beyond the project duration. The development of agri-zone cluster agribusiness development plans, MoUs, and public-private partnership platforms will also support the financial sustainability of the clusters, by aligning central government, subnational government, and private sector resources to finance key value chain interventions and infrastructure, which is hoped to foster greater public-private collaboration for the selected value chains beyond the project duration.

68. **Environmental sustainability.** ICARE will have an explicit focus on climate-smart agriculture to contribute toward positive environmental outcomes. The project will finance activities aimed at improving water use and land use efficiency, reducing chemical/pesticide application, meeting food safety standards, reducing carbon footprint of supply chains, and so on. The Environmental and Social Commitment Plan (ESCP) prepared by the GoI will screen individual project activities to ensure that the activities are environmentally and socially sustainable.

IV. PROJECT APPRAISAL SUMMARY

A. Economic and Financial Analysis

Economic Analysis

69. The main economic project benefits will come from increased incomes of project farmers resulting from the: (a) adoption of productivity-enhancing and climate-smart/climate-resilient technologies and practices for the commodities promoted by the project; (b) diversification of production into higher-value commodities; (c) enhanced value-adding activities; and (d) better integration of farmers into food crops, horticulture, estate crops, and livestock value chains. It is expected that the project will



directly support and benefit around 17,700 farmers who will be organized into farmer group enterprises/KPs as well as reach at least another 72,300 farmers in the project locations who may benefit from trainings or investments made in the value chain in the project area, including improved market access and information.⁴¹ Furthermore, other relevant value chain actors of the selected commodities in the project locations will also benefit.

70. The project will also contribute to improved nutrition including more dietary diversity, through enhanced domestic supply and lower prices for domestic consumers of these commodities, thereby helping nutritious food become more affordable for the population. Furthermore, the project is expected to generate substantial employment opportunities for on-farm labor (in production, handling, processing, and marketing of incremental production).

71. The monetary value of the GHG reduction benefits has been estimated and considered as economic benefits of the project in the Economic and Financial Analysis (EFA) (see annexes 4 and 5). It should be noted that the project will support many investments related to the reduction of food loss and waste (FLW) which are not accounted for, as a detailed analysis of off-farm GHGs emitted or avoided along the agro-value chain through investments in (a) post-harvest handling and storage, (b) processing, and (c) distribution have not been attempted due to lack of data. However, the potential benefits have been described in Annex 5.

72. The economic internal rate of return (EIRR) of the project has been calculated over a 20-year period for three base-case scenarios (without carbon reduction benefits and two scenarios of shadow price of carbon). Economic project costs have been estimated by removing taxes paid by the project as these are transfer payments and not economic costs. The EIRR for the base case is 15.7 percent for the without-carbon-reduction-benefits scenario and 15.7 percent and 15.8 percent for the low and high shadow price of carbon scenarios, respectively (given the rather marginal carbon sequestration benefits estimated—rounded to one decimal).

73. Sensitivity analyses have been conducted to assess the impact of changes in the main parameters affecting the economic outcome of the project as a result of (a) changes in project costs, (b) changes in the number of farmers supported realizing benefits, (c) changes in the estimated benefits realized by farmers directly and indirectly supported, and (d) delays in project execution due to the risks that have been identified in the project's risk analysis. The results show that the project remains economically viable in the case of adverse changes in project costs and benefits. It should be noted that the analysis is only based on the estimated benefits at the farmer level and does not consider the potentially high benefits that may be realized by other value chain actors. Furthermore, potential benefits from improved food and nutrition security and environmental benefits (including reduced GHG emissions in the long run) have not been estimated in economic terms.

Financial Analysis

74. The financial analysis, which provides the foundation for the economic analysis of the project, has been carried out for 18 representative production models⁴² that were developed in close collaboration

⁴¹ PDO indicator 4: Number of farmers reached with agricultural assets or services = 90,000.

⁴² The project will support up to two commodities in each of the nine districts.



with experts from the provincial AIATs for the 15 commodities supported by the project in 14 agri-zone clusters across the nine districts. For each production model, there are two scenarios: (a) with project (reflecting the abovementioned improved technologies/practices and benefits from farmers being organized in KPs) and (b) without project (reflecting the existing technologies/practices and farmers' organization). For each production model analyzed, value added, gross margin, net profit, return to labor, and internal rate of return (as appropriate) have been calculated. Financial analysis has confirmed that the activities selected are economically viable and financially sustainable.

B. Fiduciary

(i) Financial Management

75. **A Financial Management Assessment (FMA) was carried out** to assess the adequacy of the financial management system of the implementing agencies to produce timely, relevant, and reliable financial information on project activities. The FMA also assesses the adequacy of the accounting systems for project expenditures and underlying internal controls to meet fiduciary objectives and allow the World Bank to monitor compliance with agreed implementation procedures and progress toward its objectives.

76. **The project will be using the Government's system for financial management that includes budgeting, accounting, reporting, internal control, and auditing.** The financial management risk is assessed as Moderate. The implementing agency is experienced in implementing World Bank-funded operations. IAARD, where the PMU has been established, is experienced in implementing the SMARTD project whereby the financial management performance was satisfactory. Good financial management control and timely financial reporting were in place, and the financial reports consistently received clean audit opinion with timely follow-up of audit findings. The last two years' audit report for the MoA (FY2019 and FY2020) by the Supreme Audit Institution (*Badan Pemeriksa Keuangan*, BPK) also gave unqualified opinion for the ministry's financial report. Taking a lesson learned from the SMARTD experience, while the overall project coordination will be managed by IAARD, the budgeting arrangement will be decentralized and allocated to each PIU to ensure strong ownership and good acceleration of project implementation. The project has also been included in the FY2022 MoA budget document (DIPA 2022) for the PMU and PIUs. Complete FM staff including finance staff and commitment officers will be appointed from the PMU and all PIUs; this has already been adopted as the project's organizational structure. There are risks in the implementation of the KP Matching Grant and Competitive Technology due to the dispersed project locations, inherently weak financial management capacity of the farmer groups, and lack of experience of the PMU and PIUs on managing KP matching grant scheme. The KP Matching Grant and Competitive Technology Grant Manual will be developed as part of the POM. A more detailed financial management arrangement is provided in annex 1. The FMA concludes that the arrangement will satisfy the World Bank's minimum requirements under the World Bank Procedures October 1, 2018, to provide, with reasonable assurance, accurate and timely information on the status of the loan, as required by the World Bank.

(ii) Procurement

77. **Applicable Procurement Framework.** All procurement of goods, works, non-consulting services and consulting services under the project will be carried out in accordance with the World Bank Procurement Regulations for Investment Project Financing (IPF) Borrowers, dated November 2020 (Bank's



Procurement Regulation) and the provisions stipulated in the Loan Agreement and approved procurement plan. The project will be subject to the World Bank's Anti-Corruption Guidelines, dated October 15, 2006, revised in January 2011, and as of July 1, 2016. The project will use the Systematic Tracking of Exchanges in Procurement (STEP) to plan, record, and track procurement transactions.

78. **Project Procurement Strategy for Development (PPSD) and Procurement Plan (PP).** The PPSP includes detailed assessments of the markets for goods, works, and services required for project implementation, procurement approaches, and procurement risks analysis along with corresponding proposed risk mitigation measures. Based on the PPSP conclusions, IAARD has prepared and finalized the PP for the first 18 months of project implementation. The PP will be updated at least annually or as required during project implementation to reflect any substantial changes in procurement approaches and methods to meet the actual implementation needs, market fluctuations, and improvements in institutional capacity. The updated PP along with the revised PPSP will be subject to the Bank's prior review and approval.

79. **Use of National Procurement Procedures.** All contracts for goods, works and consultancy services following national market approach shall use the national procurement procedures set out in the Presidential Regulation No. 16 of 2018 on Government Procurement (as amended). The provisions of the presidential regulation are consistent with the WB Procurement Regulations Section V – Para 5.4 National Procurement Procedures subject to a few conditions as specified in the PPSP and in the project textual part of the procurement plan that will be approved at negotiations.

80. **Procurement capacity and risk assessment.** IAARD will be responsible for procurement planning and budgeting, while the execution of the procurement process will be the responsibility of the MoA Procurement Service Unit and AIATs in each project locations. While IAARD had experience in implementing the SMARTD project and had their own staff to oversee the procurement process for Bank-financed projects, currently procurement processes in MoA—including IAARD—are centralized to the new Procurement Service Unit in MoA. The procurement staff of the Procurement Service Unit in MoA and AIATs have had no experience in carrying out procurement processes under the Bank's Procurement Regulation. Further details of the initial procurement arrangements, procurement risks, mitigation and capacity building measures are provided in Annex 1 Implementation Arrangements, which will be updated upon finalization of the PPSP and Procurement Plan.

C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

D. Environmental and Social

81. **The overall environmental and social risk rating is Substantial.** Although the project will bring positive environmental and social benefits through integrated public and private investments for



sustainable agricultural practices that divert agricultural systems away from environmentally damaging crops and practices and support livelihoods of farmers and the community, exposure to chemical and biological hazards through primary production and post harvest operations carry the risks of cumulative impacts, pollution, contamination, and health and safety.

82. Environmental and Social Standards (ESS) that are currently relevant for the project include ESS1 (Assessment and Management of Environmental and Social Risks and Impacts); ESS2 (Labor and Working Conditions); ESS3 (Resource Efficiency and Pollution Prevention and Management); ESS4 (Community Health and Safety); ESS5 (Land Acquisition, Restrictions of Land Use and Involuntary Resettlement); ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources); and ESS10 (Stakeholder Engagement and Information Disclosure). The MoA has developed the following instruments to address relevant ESS requirements: (a) Environmental and Social Management Framework (ESMF) that includes outline of Environmental and Social Impact Assessment (ESIA), Environmental Codes of Practice (ECOPs), Resettlement Policy Framework (RPF), Labor Management Procedures (LMP), and Integrated Pest Management Plan as well as protocols on COVID-19 prevention and managing of potential asbestos and electronic wastes; (b) ESCP; and (c) Stakeholder Engagement Plan (SEP) that includes a Feedback and Grievance Redress Mechanism. The ESMF provides the principles and guidelines to screen, assess, and mitigate the potential environmental and social risks and impacts of each activity in accordance with requirements of applicable national regulations, ESS, and WBG EHS guidelines. After obtaining the World Bank's clearance, the MoA disclosed the updated instruments on February 8, 2022, on the MoA website to meet the requirement of ESS10. The MoA will develop a POM to include, among others, details on beneficiary criteria as part of the KP Matching Grant Manual and an incident reporting mechanism that includes incidents on child labor and other project-related incidents. The project does not affect any international waterways and therefore does not fall within the scope of application of OP 7.5 'Projects on International Waterways' and is not implemented in any disputed areas; thus, OP 7.60 'Projects in Disputed Areas' is also not triggered.

83. The MoA has demonstrated that it is fully committed in implementing the environmental and social risks management policies requirements through past projects supported by the World Bank. Given the MoA is new to the Environmental and Social Framework (ESF), continued support for the MoA and the implementing agencies (IAARD and local agricultural agencies) will be required to ensure capacity building on the ESF and the allocation of budget and resources to apply the ESS. The assessment of the MoA and IAARD's current capacity to manage environmental and social risks and impacts are included in the ESMF along with the required capacity-building plan.

Environmental Risk Management

84. The environmental risk rating is Substantial due to risks associated with potential pollution and contamination, occupational and community health and safety through use of pesticides, and animal disease-causing agents/pathogens (bacteria, fungi, mites, and viruses); the unknown number and precise footprint of each investment that may cause important cumulative impacts; and the limited capacity of local institutions and farmer groups on environmental risk management. The potential risks of pollution and harm to the environment include (a) physical-chemical degradation of soils and soils loss; (b) inappropriate use of fertilizers and excessive use of poor quality water resulting in salinization; (c) soil erosion and sedimentation; (d) contamination of soil and groundwater and eutrophication of surface water resources from surface runoff; (e) application of pesticides, feed/animal/processing wastes, and



nutrient leaching; (f) non-crop wastes and potential hazardous wastes (asbestos and/or electronic wastes) from small- to medium-scale renovation and/or construction works; and (g) emissions and odors from machinery, fertilizers use, combustion of byproducts and crop residues. The ESMF provides measures to screen, assess, and mitigate potential environmental risks and impacts through application of a negative list, risk screening, environmental management plans, ECOPs and guidance on use of pesticides, and disposal of asbestos and electronic wastes.

Social Risk Management

85. **The social risk rating is Moderate.** These risks are related to small- to medium-scale land acquisition for project finance-related infrastructure works; social inclusion and unequal access of farmer groups to project information and benefits; and low to moderate risk level on child labor in farming activities, which expose children to extreme environmental conditions and agrochemicals. Risks of expropriation of property, physical displacement, and restriction on land use issues are not envisaged as project activities prioritize using the farmers' own lands. The risks associated with labor influx, sexual exploitation and abuse/sexual harassment (SEA/SH) or gender-based violence, and community health and safety are considered low as civil works are small to medium in scale and will mostly employ local laborers and the communities themselves. There is no impact on indigenous peoples as there is no indication that indigenous peoples reside in the target locations. Risks related to forced labor are not envisaged. The project is expected to have positive direct and indirect social benefits, including improved community livelihoods as it supports smallholders' production and resilience. The ESMF provides measures to screen, assess, manage, and mitigate through application of land due diligence procedure, RPF that also includes Voluntary Land Donation Protocol, application of beneficiaries' criteria, and mechanisms for equal distribution of information. The SEP also covers engagements with vulnerable peoples (smallholder farmers, women and youth farmers) while the LMP includes provisions on working conditions; occupational health and safety; grievance arrangements for project workers; procedures to prevent, address, and monitor child labor; and applicable requirements for contractors (including reference to relevant national laws, ESS2 requirements, and the requirement to include and implement codes of conduct in C-ESMPs to prevent child labor and sexual exploitation and abuse/sexual harassment or gender-based violence). The LMP also provides provisions to limit children's participation (between the ages of 14 and 18) in farm-based project activities to light works and the prohibition of certain tasks that may jeopardize the health, safety, educational, and spiritual well-being of children.

V. GRIEVANCE REDRESS SERVICES

86. **Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS).** The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>.



For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

VI. KEY RISKS

87. **The overall project risk rating for the proposed project is Substantial.** All risks below, except the environmental and social risk, are rated for residual risks after mitigation measures. Substantial risks are (a) sector strategies and policies, (b) institutional capacity for implementation and sustainability, (c) fiduciary, (d) environmental and social risks, and (e) other risks. Measures to mitigate these risks are outlined below. The potential benefits of the proposed project outweigh the residual risks.

88. **The risk associated with Sector Strategies and Policies is rated Substantial** due to a challenging policy environment and political economy. There are initial signs that the Government might be proposing major policy reforms to the agriculture sector, including the removal of trade and investment barriers in agriculture and a reorientation of the fertilizer subsidy program. The proposed project will support aspects of implementation, such as a transition program as a result of fertilizer subsidy program reforms and the repurposing of public resources. The MoA is currently going through a restructuring process as a result of the creation of the National Research and Innovation Agency (*Badan Riset dan Inovasi Nasional*, BRIN) and the National Food Agency. The MoA is expected to shift research functions to the newly created BRIN and create a new agency with a new mandate on system development. This potential institutional change will affect the mandate of IAARD but the risk is managed by proactively working with the MoA to ensure that these changes do not affect project implementation.

89. **Institutional Capacity for Implementation and Sustainability risk is Substantial.** IAARD and the AIATs have experience of managing the SMARTD project; however, in the light of restructuring within the MoA, including IAARD and the AIATs, the risk of loss of institutional capacity is substantial. Furthermore, the high turnover of staff and inclusion of districts which do not have experience of working with the World Bank project increase this risk. This risk will be proactively managed by (a) extensive capacity building through trainings, hiring of relevant expert consultants, and support provided by the World Bank team on all aspects of project implementation; (b) proactive joint review and implementation support (virtual as well as face to face) by the World Bank; and (c) organization of exchange workshops and seminars for all the project staff to ensure peer-to-peer learning.

90. **The fiduciary risks are considered Substantial.** The project will be using the government system that includes budgeting, accounting, reporting, internal control, and auditing. The implementing agency is experienced in implementing World Bank funded operations. IAARD, where the PMU has been established, is experienced as it implemented the SMARTD project whereby the financial management performance was satisfactory. Good financial management control and timely financial reporting are in place, and the financial reports were consistently received with clean opinion and with timely follow up of audit findings. The risk for this project is related to the dispersed project locations. This may create a challenge for the PMU to a) monitor and supervise budget preparation and execution; b) prepare consolidated program financial reports without delays; c) assess the overall efficiency and effectiveness of the expenditure. The risk is also noted in the implementation of KP matching grants due to the dispersed project locations and inherently weak financial management capacity of the farmer groups. An action plan on risk mitigation was agreed during project appraisal and is included as part of the Financial



Management arrangement of the project. It includes FM staffing and dedicated commitment officer, early budget preparation, involvement of Inspectorate General of MoA on the project oversight, and development of Project Operations Manual subject to The World Bank's approval.

91. The PMU, IAARD, is experienced in carrying out and overseeing procurement under the Bank's Procurement Guidelines. Procurement for the project implementation will be carried out by IAARD and the AIATs for each project location will be responsible to the procurement of goods and civil works. The risk for this project is related to lack of experience of the procurement staff to implement procurement in accordance with the Bank's Procurement Regulations, potential procedural non-compliance during the procurement process, and weak contract management. Details of the risk and mitigation measure is available in Annex 1.

92. **The environment risk is rated as Substantial and social risk is rated as Moderate.** Together, however, the environment and social risk is rated Substantial. The risk rating considers that, although the project will target small producers, the number, type, and precise locations of investments are currently unknown, which may warrant cumulative impact assessments. The risk rating also considers the limited capacity and commitment of local governments and farmer groups on environmental risk management, particularly on the use and disposal of toxic substances (pesticides, asbestos, and e-wastes). The environmental and social section above provides further details of the mitigation measures for this risk.

93. **Other risks are rated as Substantial,** as they include the impact of the COVID-19 crisis or other events that will negatively affect farm production, performance of value chains, market demand, and public and private investment potential. Furthermore, climate change-related shocks pose other substantial risk. To mitigate this risk, the project has adopted a climate-smart agriculture approach to ensure all interventions of the project contribute toward enhances resilience. The project was prepared during the COVID-19 pandemic and the client and beneficiaries have adapted well and are accustomed to working during the pandemic, which will help mitigate the risk during future potential outbreaks.



VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Indonesia

Agriculture Value Chain Development Project (ICARE)

Project Development Objectives(s)

The Project Development Objective is to support environmentally and financially sustainable and inclusive agricultural value chains in selected locations

Project Development Objective Indicators

Indicator Name	PBC	Baseline	End Target
To support environmentally and financially sustainable and inclusive agricultural value chains			
Proportion of project-supported Korporasi Petani members with increased sales through commercial channels (Percentage)		0.00	80.00
Percentage increase in productivity of selected crops and livestock from incorporating climate smart agriculture technologies amongst project beneficiaries (Percentage)		0.00	30.00
Number of partnerships facilitated by the project (Number)		0.00	30.00
Farmers reached with agricultural assets or services (CRI, Number)		0.00	90,000.00
Farmers reached with agricultural assets or services - Female (CRI, Number)		0.00	22,500.00
Farmers reached with agricultural assets or services - Youth (Number)		0.00	30,000.00



Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	End Target
Component A: Strengthening value chains in selected Kawasan Pertanian (agri-zone clusters)			
Number of local agribusiness development plans developed and funded (Number)		0.00	13.00
Number of business plans of Korporasi Petani supported through matching grants (Number)		0.00	61.00
Number of Korporasi Petani making profits after 2 years of matching grants financing (Number)		0.00	10.00
Percentage of farmers trained in business and financial skills in Korporasi Petani (Percentage)		0.00	80.00
Percent of farmers trained in business skills in Korporasi Petani - female (Percentage)		0.00	80.00
Proportion of women in Korporasi Petani leadership and management structures (Percentage)		0.00	25.00
Percentage of farmers in Korporasi Petani benefited from infrastructure supported by the project (Percentage)		0.00	80.00
Percentage of targeted clients satisfied with the agricultural services facilitated by the project (Percentage)		0.00	80.00
Percentage of targeted clients satisfied with the agricultural services facilitated by the project - female (Percentage)		0.00	80.00
Percentage of targeted clients satisfied with the agricultural services facilitated by the project - male (Percentage)		0.00	80.00
Component B: Strengthening institutional capacities for value chain development			
Proportion of seats held by farmers representatives in competitive grant proposals evaluation committee (Percentage)		0.00	30.00
Proportion of women among farmer representatives holding seats in competitive grants proposal evaluation committee (Percentage)		0.00	50.00
Number of competitive grants awarded for technology		0.00	150.00



Indicator Name	PBC	Baseline	End Target
adaptation and dissemination (Number)			
Number of technologies produced and disseminated through collaborative partnerships (Number)		0.00	120.00
Farmers adopting improved agricultural technology (CRI, Number)		0.00	70,000.00
Farmers adopting improved agricultural technology - Female (CRI, Number)		0.00	18,750.00
Farmers adopting improved agricultural technology - male (CRI, Number)		0.00	51,250.00
Hectares of agricultural area where practices supporting climate change adaptation and mitigation are implemented (Hectare(Ha))		0.00	7,200.00
Number of value chain actors and agribusiness SME workers in the selected value chains trained and supported (Percentage)		0.00	500.00
Number of public sector officials and extension workers trained to facilitate value chain development and deliver agricultural services (Number)		0.00	5,000.00
Share of approved competitive technology grant proposals that include private sector participation and investment (Percentage)		0.00	70.00
C: Project Management			
Percentage of GRM addressed from the total claim received (Percentage)		0.00	80.00
Number of knowledge products developed and events conducted to disseminate learnings from the project (Number)		0.00	30.00



Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Proportion of project-supported Korporasi Petani members with increased sales through commercial channels	This indicator will measure the number of Korporasi Petani members that have achieved an increase in sale of their produce through commercial marketing channels. Commercial marketing channels refer to registered agribusiness firms, whether large agribusiness firms or registered agribusiness MSMEs. This will reflect a move from sales in informal channels to formal channel. The baseline value of this indicator is zero.	Mid-term / EOP	Project Evaluation	Baseline survey, MTR and project evaluation	Implementing Agency and Technical Support Agency
Percentage increase in productivity of selected crops and livestock from incorporating climate smart agriculture technologies amongst project beneficiaries	Productivity increase in selected crops amongst project beneficiaries. Crop productivity will be measured in terms of yield per hectare while livestock productivity will be measured in terms of yield of the various commercial outputs (e.g., meat, dairy, eggs) per livestock unit. The	Mid-term / EOP	Project Evaluation	Baseline survey, MTR and project evaluation	Implementing Agency and Technical Support Agency



	determination of 2-3 key crops/livestock to be monitored will be determined in the early stages of project implementation. The baseline value of this indicator is zero.				
Number of partnerships facilitated by the project	The number of partnerships with Korporasi Petani formalized through local-level MOUs (Memorandum of Understanding) facilitated by the project. The baseline value for this indicator is zero.	Half-yearly	Project MIS	Copies of MoUs or contracts signed with the private sector	Implementing Agency
Farmers reached with agricultural assets or services	This indicator measures the number of farmers who were provided with agricultural assets or services as a result of World Bank project support. "Agriculture" or "Agricultural" includes: crops, livestock, capture fisheries, aquaculture, agroforestry, timber, and non-timber forest products. Assets include property, biological assets, and farm and processing equipment. Biological assets may	Quarterly	Project MIS	Regular reporting	Implementing Agency



	include animal agriculture breeds (e.g., livestock, fisheries) and genetic material of livestock, crops, trees, and shrubs (including fiber and fuel crops). Services include research, extension, training, education, ICTs, inputs (e.g., fertilizers, pesticides, labor), production-related services (e.g., soil testing, animal health/veterinary services), phyto-sanitary and food safety services, agricultural marketing support services (e.g., price monitoring, export promotion), access to farm and post-harvest machinery and storage facilities, employment, irrigation and drainage, and finance. Farmers are people engaged in agricultural activities or members of an agriculture-related business (disaggregated by men and women) targeted by the project.				
Farmers reached with agricultural assets or services - Female					



Farmers reached with agricultural assets or services - Youth	The number of farmers aged under 40 reached with agricultural assets or services through the project.				
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Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Number of local agribusiness development plans developed and funded	Local agri-business plans that have been developed through the project technical assistance and then funded by the project.	Half-yearly	Project MIS	Financial records from IAARD	Implementing agency
Number of business plans of Korporasi Petani supported through matching grants	The number of Korporasi Petani business plans have been developed through support received from the project TA and received financing through matching grants.	Half-yearly	Project MIS	Financial records from IAARD	Implementing Agency
Number of Korporasi Petani making profits after 2 years of matching grants financing	Number of Korporasi Petani in operation and generating profit 2 years after receiving matching grants support.	EOP	Project MIS	Financial records from Korporasi Petani	Implementing Agency
Percentage of farmers trained in business and financial skills in Korporasi Petani	Farmers that received direct training in business and financial management skills.	Quarterly	Project MIS	Regular reporting	Implementing Agency



Percent of farmers trained in business skills in Korporasi Petani - female					
Proportion of women in Korporasi Petani leadership and management structures	The proportion of seats held by women in Korporasi Petani board of directors and management committee.	Annually	Project MIS	Regular reporting	Implementing Agency
Percentage of farmers in Korporasi Petani benefited from infrastructure supported by the project	Farmers that have directly benefited from the value chain infrastructure implemented under the project through the KP.	Quarterly	Project MIS	Regular reporting	Implementing Agency
Percentage of targeted clients satisfied with the agricultural services facilitated by the project	The number of farmer clients satisfied by agriculture services (e.g., soil testing services, disease identification services, product quality assurance, equipment calibration services) supported by the project, in terms of quality, timeliness, and relevance of service provided.	Quarterly	Project MIS	User satisfaction survey	Implementing Agency
Percentage of targeted clients satisfied with the agricultural services facilitated by the project - female					
Percentage of targeted clients satisfied with the agricultural services facilitated by the project - male					
Proportion of seats held by farmers representatives in competitive grant proposals evaluation committee	Proportion of seats held by farmers representatives in competitive grant proposals	Annually	Project MIS	Regular reporting	Implementing Agency



	evaluation committee				
Proportion of women among farmer representatives holding seats in competitive grants proposal evaluation committee	Proportion of women among farmer representatives holding seats in competitive grants proposal evaluation committee.				
Number of competitive grants awarded for technology adaptation and dissemination	The project will support partnerships in agriculture technology adaptation and dissemination. This indicator will track the number of financial grants awarded.	Annually	Project MIS	Financial reports and grant agreements from IAARD	Implementing Agency
Number of technologies produced and disseminated through collaborative partnerships	Innovative technologies that are supported under the project through collaborative partnerships. It will be achieved after they have been disseminated to a wide group of farmers.	Half-yearly	Project MIS	Regular reporting	Implementing Agency
Farmers adopting improved agricultural technology	<p>This indicator measures the number of farmers (of agricultural products) who have adopted an improved agricultural technology promoted by operations supported by the World Bank.</p> <p>NB: "Agriculture" or "Agricultural" includes:</p>	Annually	Project MIS	Farm surveys	Implementing Agency



	<p>crops, livestock, capture fisheries, aquaculture, agroforestry, timber and non-timber forest products.</p> <p>Adoption refers to a change of practice or change in use of a technology that was introduced or promoted by the project.</p> <p>Technology includes a change in practices compared to currently used practices or technologies (seed preparation, planting time, feeding schedule, feeding ingredients, postharvest storage/ processing, etc.). If the project introduces or promotes a technology package in which the benefit depends on the application of the entire package (e.g., a combination of inputs such as a new variety and advice on agronomic practices such as soil preparation, changes in seeding time, fertilizer schedule, plant protection, etc.), this counts as one technology.</p>				
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	Farmers are people engaged in farming of agricultural products or members of an agriculture related business (disaggregated by men and women) targeted by the project.				
Farmers adopting improved agricultural technology - Female		Annually	Project MIS	Farm surveys	Implementing Agency
Farmers adopting improved agricultural technology - male		Annually	Project MIS	Farm surveys	Implementing Agency
Hectares of agricultural area where practices supporting climate change adaptation and mitigation are implemented	Area in hectares where practices supporting climate change adaptation and mitigation in agriculture are implemented	Annually	Project MIS	Farm surveys	Implementing Agency
Number of value chain actors and agribusiness SME workers in the selected value chains trained and supported	The number of value chain actors and agribusiness SME workers in the project value chains that have received training and project support.	Quarterly	Project MIS	Regular reporting	Implementing Agency
Number of public sector officials and extension workers trained to facilitate value chain development and deliver agricultural services	Number of public sector officials and extension workers receiving training, including through short-term courses and training of trainers (ToTs) to facilitate the development of value chains, including the development of Korporasi Petani and partnerships, as	Quarterly	Project MIS	Regular reporting	Implementing Agency



	well as deliver agricultural services and disseminate new technologies (including gender-responsive technologies that support climate change adaptation and mitigation in agriculture).				
Share of approved competitive technology grant proposals that include private sector participation and investment	This indicator measures private sector engagement and investment in competitive technology grant. This will monitor proposals that include private sector participation and investment. PIU will monitor and capture this information from the reporting and M&E system that will be established and will include a) how many private sector participations are included in the competitive technology grants and b) the financial contribution that the private sector will contribute to these competitive technology grants.	Annual	M&E system and annual reports	Reports from PIU	PIU
Percentage of GRM addressed from the total claim received	This indicator measures the percentage of grievance addressed from the total	Quarterly	Project MIS	Project GRM data	Implementing Agency



	received through the project Grievance Redress Mechanism (GRM). This is calculated through the following formula: Grievance addressed/Grievance received*100.				
Number of knowledge products developed and events conducted to disseminate learnings from the project	This indicator measure the number of knowledge products developed (e.g., studies, reports, policy briefs) and events conducted (e.g., knowledge exchange workshops between project locations and/or with external parties, public dissemination workshops) conducted to disseminate learnings from the project, to support replication and scaling-up of value chain models developed.	Annually	Project MIS	Regular reporting	Implementing Agency



ANNEX 1: Implementation Arrangements and Support Plan

COUNTRY: Indonesia

Agriculture Value Chain Development Project (ICARE)

Financial Management Arrangement

- Budgeting.** The budgeting system follows the existing government procedures. World Bank financing will be included in the annual government budget and line ministry budget document (DIPA). The DIPA will be allocated in the PMU in IAARD and also distributed across PIUs in AIATs based on the annual work plan approved by the World Bank. Budget preparation is well defined, but there are frequent delays in execution. Parallel budgeting will be made for contracts and activities financed by loan and counterpart funds. Risk is noted regarding delays of budget availability and revision that may delay project implementation. The POM will provide a detailed timetable of annual work plan preparation to be made early to be in line with the government budget processing time. The FM staff assigned for the project within the PMU will also assist the PMU and PIU on timely budget preparation and revision. The risk of budget delay is also mitigated during preparation by inclusion of the project budget in DIPA 2022 of the PMU and PIUs so the expenditures can be incurred soon after the project becomes effective.
- Accounting and reporting.** The PMU and PIU offices maintain separate accounting records for all payment orders (*Surat Perintah Membayar/SPM*) and remittance orders (*Surat Perintah Pencairan Dana/SP2D*) on a cash basis in accordance with the Ministry of Finance Regulation 224/PMK.05/2016. All financial transactions are recorded in the Government accounting system and included in Government accountability reports. The original records are maintained in the file for auditing purposes. The PMU will prepare a set of consolidated interim financial reports (IFRs) for project monitoring purpose and for requesting advance from the World Bank. The PMU can obtain the financial information needed to prepare the IFR from the Government treasury information system (*Sistem Perbendaharaan dan Anggaran Negara/SPAN*). The PMU is responsible to submit the report to the World Bank no later than 45 days after the end of each quarter.
- Internal control.** The payment verification process will rely on government systems. Direct and independent documentary evidence will need to be furnished to the implementing agencies for them to verify completion before payments are released to third parties. For workshop/training activities, payment validation procedures will require attachment of direct original supporting evidence of completion of all these activities. A commitment officer and assistant treasurer are to be also appointed in the PMU and PIUs to assist the project within one month after the project effectiveness. For KP matching grant and competitive technology grant activities, the KP Matching Grant Manual and Competitive Technology Grant Manual will be developed as part of the POM. Strengthening of oversight is also proposed, including involvement of Inspectorate General of the MoA to include the project in the annual audit plan.
- Fund flow.** A Designated Account (DA) denominated in US dollars will be opened by the Director General Treasury (MoF) in the Bank Indonesia (the central bank) specifically for the project. The project expenditures will include goods, consultant, non-consultant services, works, training/workshop, travel expenditures, operational expenses, KP matching grants, and competitive technology grants. Access to



funds in the DA for payment to third parties will follow the Government's treasury system. The Work Unit in the PMU and PIUs will review payment requests from third parties before issuing payment request documents (SPM) to the treasury office for payment. The treasury office will input the payment request to the treasury information system (SPAN) and the Director General Treasury of the MoF will issue a payment order to the operational bank of the treasury office to process the payment. The PIUs will submit to the PMU information of all payment remittances (SP2Ds) charged to the projects to use as the basis to develop consolidated withdrawal applications. The PMU submits to the World Bank through the MoF, the consolidated withdrawal application to record the expenditures and request additional funds.

5. **Audit arrangements.** The project will be subject to external audit by BPK. Each audit will cover a period of one fiscal year of the recipient. The audits will be conducted based on terms of reference agreed with the World Bank. Audit reports and audited financial statements will be furnished to the World Bank not later than six months after the end of the fiscal year concerned and will be made available to the public. The audit will go beyond merely providing an opinion on the financial statements and will also include opinions on internal control frameworks and compliance with the loan covenants and related regulations.

6. **Disbursements.** The applicable disbursement methods are advance and reimbursement, while direct payment and special commitment are not anticipated under the project. A DA denominated in US dollars will be opened in Bank Indonesia (the central bank) under the MoF. The DA will be a segregated account solely used to finance eligible project expenditures. Payments from the DA will follow the Government mechanism and will be authorized by the MoF's treasury office. The ceiling of the advance to the DA will be variable based on six months' projected expenditures. Report of the use of the DA fund and request for additional advance will be based on the quarterly IFR which should be submitted to the World Bank no later than 45 days after the end of each quarter and will consist of (a) a list of payments for contracts under the World Bank's prior review and records evidencing such expenditures, (b) statement of expenditures for all other expenses, (c) DA reconciliation statement, (d) IFR, and (e) projected expenditures for the next six months. The PMU will be responsible for reconciling the DA and preparing applications for withdrawal of advances and preparing reports on the use of the DA, duly approved by the Director General Treasury before submission to the World Bank. All documentation for the expenditures as reported for disbursements will be retained at the PMU and PIUs and will be made available to the auditors for the annual audit and to the World Bank and its representatives if requested. The proceeds of the loan will be disbursed against eligible expenditures as in the disbursement category table as illustrated in table 1.1. Counterpart funds of i) \$9.1 million represents beneficiary contributions in respect of KP matching grants; and ii) \$10 million represents government counterpart funding for full financing of Component C of the project.

Table 1.1. Loan Disbursement Categories

Disbursement Category	Amount of the Loan Allocated (US\$, million)	Percentage of Expenditures to Be Financed (inclusive of taxes)
Goods, works, non-consulting services, consulting services, training/workshop, KP matching grant, competitive technology grant, and incremental operating costs for part 1 and 2 of the project	100.00	100
TOTAL AMOUNT	100.00	



Procurement

7. Procurement for the project will be carried out in accordance with the World Bank's Procurement Regulations for IPF Borrowers for Goods, Works, Non-Consulting and Consulting Services, dated November 2020; and by the provisions stipulated in the Loan Agreement and approved procurement plan. The Project will be subject to the World Bank's Anticorruption Guidelines, dated October 15, 2006, revised in January 2011, and as of July 1, 2016. The Project will use the Systematic Tracking of Exchanges in Procurement (STEP) to plan, record and track procurement transactions.

8. The PPSD includes detailed assessments of the markets for goods, works, and services required for project implementation, procurement approaches, and procurement risks analysis along with corresponding proposed risk mitigation measures. Based on the PPSD conclusions, IAARD has developed the PP for the first 18 months of project implementation. The PP will be updated at least annually or as required during project implementation to reflect any substantial changes in procurement approaches and methods to meet the actual implementation needs, market fluctuations, and improvements in institutional capacity. The updated PP along with the revised PPSD will be subject to the Bank's prior review and approval

9. The Government's e-procurement system (*Sistem Pengadaan Secara Elektronik*, SPSE) may only be used for procurement of goods, works and non-consulting services through the Open National Competitive Procurement and using the bidding documents acceptable by the Bank. Furthermore, the SPSE International Competitive Bidding (ICB) e-procurement system modified by LKPP may be used only for the selection of consultant firms under the Quality Consultants Quality and Cost-based Selection (QCBS) method and using the Bank's standard Request for Proposal document adjusted satisfactorily to the Bank for electronic use. Procurement under all other methods including Open International Competitive Procurement shall be carried out through non-electronic processes with manual issuance of invitation for bids and receipt of bids/proposals, until such time that the modification of the LKPP's modified SPSE ICB e-procurement system has been completed by LKPP acceptable to the Bank, which will be confirmed through the Bank's written no objection.

10. **Procurement Risk Assessment.** A procurement risk assessment has been carried out and the key procurement risk areas include:

- a) There is potential delay in procurement processes due to the procurement staff under PIUs has no experience with Bank financed projects, particularly on the selection of consultants using QCBS.
- b) The PIUs follow the Government Procurement Regulation instead of the Bank's Procurement Regulations which leads to procedural non-compliance.
- c) Rejection of lower-priced bids due to narrow interpretation of qualification criteria or not seeking clarifications from bidders on factual/historic qualification information.
- d) Weak contract management by the Commitment-making Official (*Pejabat Pembuat Komitmen*, PPK).



- e) Proceeding with issuance of notice to commence to the contractor without finishing contract requirements and signing.
11. The risks will be mitigated through the following measures:
- a) The Bank will deliver training to the PMU/PIUs on the World Bank's Procurement Regulations and also provide hands-on guidance.
 - b) Requiring use of the World Bank's online procurement planning and tracking tool (STEP); regular monitoring and reporting of progress of procurement performance to ensure compliance with the World Bank's Procurement Regulation.
 - c) Including an explicit provision in the POM and procurement plan to highlight that the Bank's Procurement Regulations shall govern all procurement under the Project and take precedence over Government procurement regulations.
 - d) Specifying qualification criteria in bidding documents in an explicit manner such that there is no rejection of lower-priced bids without seeking written clarifications from bidders on historical and factual qualification information if not provided in the bid.
 - e) In addition to the Bank's prior review of strategically important and large value or complex contracts, it is proposed that the Bank will carry out joint fiduciary (procurement and financial management) supervision missions in the field to be conducted at least twice per year, including delivering training and carrying out ex-post reviews of no less than 20 percent of the contracts subject to the Bank's post review.
 - f) Detailed procurement steps for various methods to be used under the project will be elaborated in the POM as well as guidance on due diligence on verification of bidders' qualification documents.
 - g) Assigning staff experienced with Bank-financed projects in the PMU to oversee the procurement process under the project.
 - h) Monitoring of procurement and contract management compliance and performance will be strengthened through centralized oversight by the PMU.
12. **The procurement under the project is expected to include:** a) consultants and technical assistance to support project implementation; b) equipment to improve public services for value chain; c) IT-related equipment; (d) development of MIS system; (e) farming equipment for *Korporasi Petani* in project locations; and (f) small civil works, e.g., rehabilitation of irrigation, storage sheds, screen house in project locations.
13. It is expected that civil works, goods and non-consulting services (if any) will be procured through Open National Competitive Procurement.
14. Consulting services for the project management support consultant and technical assistance will mostly selected through the QCBS method.



KP Matching Grants and Competitive Technology Grants

15. IAARD will be responsible for the implementation of the KP matching grants as well as the competitive technology grants. For the KP matching grants, a service provider will be contracted to support the value chain development and application for the KP matching grants by the farmer organizations. A Technical Appraisal Committee (TAC) will be set up for assessing the technical and financial feasibility of the proposals. TAC members will appraise the proposals presented by the farmer organizations with the support of the service provider and provide a recommendation for their financing. The TAC will screen each proposal for its potential benefit to contribute toward climate change adaptation and/or mitigation. TAC members would be qualified and independent technical and financial experts nominated by IAARD within 18 months of project implementation. The TAC of the KP matching grants scheme would have three members with expertise in agribusiness/marketing, climate-smart agriculture/agricultural production, and financial matters. A Selection/Approval Committee would also be set up with the responsibility of the final approval of the grants for disbursement. The TAC submits recommendations for financing for the review of the respective Selection Committees for the final endorsements. The Selection Committee members for KP matching grants would include IAARD, MoA representatives, and two private sector representatives, particularly commercial banks. IAARD will be responsible for the disbursement of approved matching grants by the Selection Committee to the beneficiaries.

16. For the competitive technology grants, a service provider will be contracted to raise awareness of potential applicants, including universities, NGOs, think tanks, and the private sector, regarding the competitive technology grants program, as well as manage the application process. A TAC will be set up for assessing the technical and financial feasibility, as well as relevance of the proposals to the agribusiness development plans in ICARE project locations. The TAC members will appraise the proposals presented by applicants and comprise three qualified and independent experts in agribusiness/marketing, climate-smart agriculture/agricultural production, and financial matters. A Selection/Approval Committee would also be set up with the responsibility of the final approval of the grants for disbursement. The TAC will screen each proposal against potential climate change adaptation and mitigation benefits and only those proposals that meet the climate-smart criterion will be processed further to the Approval Committee. The TAC submits recommendations for financing for the review of the respective Selection Committees for the final endorsements. The Selection Committee members for the competitive technology grants would include, among others, IAARD and/or MoA representatives, as well as two farmer representatives, male and female, to confirm the relevance of the technology being proposed to ICARE value chains. IAARD will be responsible for the disbursement of approved competitive technology grants by the Selection Committee to the beneficiaries.

17. A detailed KP Matching Grants and Competitive Technology Grants Operational Manual will be developed before the project's inception and as part of the POM. This will include, among others, (a) clearly defined eligibility criteria for beneficiaries and investments to ensure transparency; (b) terms and conditions of the KP matching grants and competitive technology grants, including proportion and type of own-contribution, where appropriate, and template agreements; (c) eligibility criteria and details on the application process and selection procedures to help potential beneficiaries receive adequate



support; (d) a clearly identified M&E strategy to ensure that the beneficiaries are using the received financing in accordance with the intended objectives, the expected outcomes and outputs are achieved, and they can be measured and are attributable to the project; and (e) a broad communication strategy to ensure that information is available to all potential beneficiaries, including support in submitting online applications and in disseminating project results to stakeholders. The KP matching and competitive technology grants that will not be used in accordance with the intended purposes will have to be repaid to the project by the beneficiaries. The recovery procedures for such grants will be stipulated in the POM and will also be captured in the agreement for the individual grant. A helpdesk will be set up for both grant programs to facilitate communication with grant beneficiaries and other relevant stakeholders.

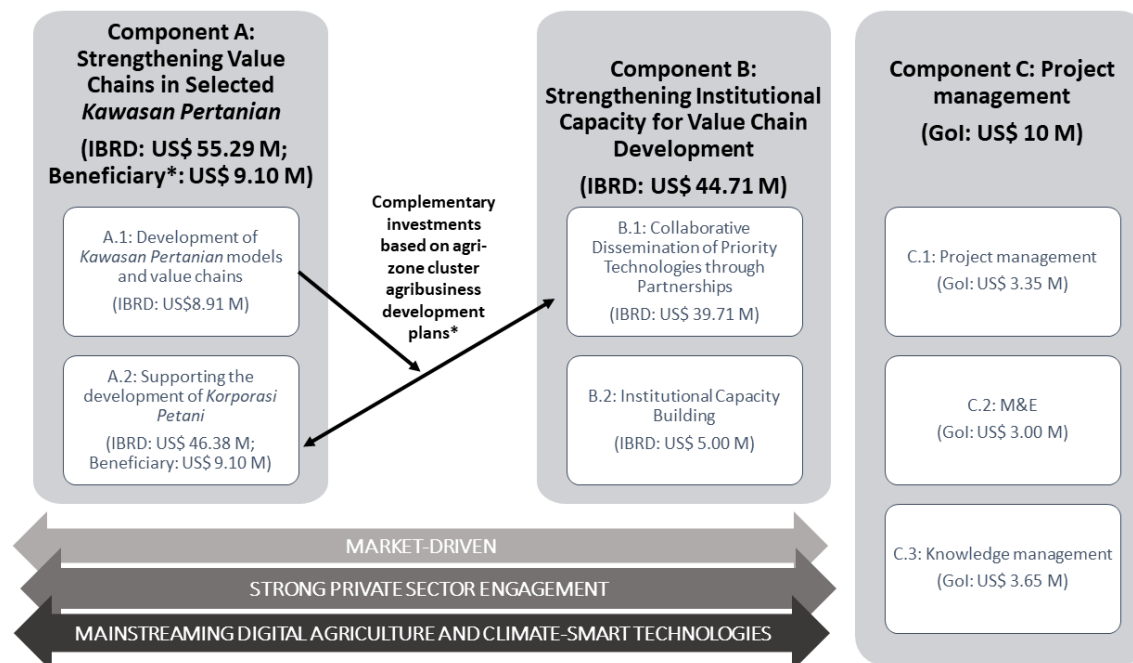


ANNEX 2: Detailed Project Description

COUNTRY: Indonesia Agriculture Value Chain Development Project (ICARE)

- The project comprises three components with subcomponents, summarized in figure 2.1.

Figure 2.1. ICARE Components



**Note:* Beneficiary contribution assumes minimum 20 percent KP contribution for matching grants.

Complementary investments: KP matching grants (A.2.d) and competitive technology grants (B.1.c) to finance complementary investments based on agri-zone cluster agribusiness development plans (A.1.c) to support KP business plans (A.2.c).

Component A: Strengthening value chains in selected Kawasan Pertanian (agri-zone clusters) (IBRD: US\$55.29 million; Beneficiary: US\$9.10 million)

- Component A will provide integrated and site-specific support for the development of viable value chain models.** Component A comprises the following subcomponents.

Subcomponent A.1: Development of Kawasan Pertanian (agri-zone clusters) models and value chains (US\$8.91 million)

- Site-specific planning will take place early in project implementation and will be key to setting the stage for subsequent activities. The planning process will follow a participatory approach and involve multiple stakeholders, including governments at different levels (central, provincial, and district), the private sector (including financial service providers and agribusiness SMEs), extension agents, and farmer



groups. Efforts will be made to ensure that gender considerations will be incorporated in the design of activities in each project location. The subcomponent will include the following activities:

- (a) **Validation of project locations and beneficiaries (US\$0.53 million).** This activity will be carried out by IAARD's local-based technology dissemination centers (AIATs) in collaboration with relevant units of the MoA and local agricultural extension centers. The final list of villages that comprise each *Kawasan Pertanian* will be based on the validation of existing farmer organizations (that is, farmer groups, farmer cooperatives, and other forms of farmer economic institutions) and will be discussed and agreed upon by relevant Echelon I Units of the MoA, the respective district governments, and other potential stakeholders, including the private sector. The selection of villages that comprise an agri-zone cluster will consider the agro-ecological suitability for the development of target commodities and should lie in a contiguous area.⁴³ The project will work with existing farmer organizations in the selected agri-zone clusters that meet the following criteria: (i) registered in *Simluhtan* (farmer registry) and the District Agriculture Office, (ii) active in carrying out collective activities, (iii) having AD-ART as well as an operational organizational structure, (iv) engaged in the production of the selected commodities, and (v) willing to participate in trainings and open to adopting relevant new technologies. The project will ensure that eligible KWTs and youth farmer groups, as well as women and youth members of farmer groups, are included in the project. In cooperation with the Government stakeholders, representation of women in farmer group management will be ensured, with specific attention paid to ensuring the representation of marginalized groups, including female heads of households.
- (b) **Participatory assessments of existing value chains in selected agri-zone clusters (US\$0.36 million).** Multi-stakeholder consultations will be held involving public and value chain actors to identify and assess market opportunities (including through demand studies), suitable technological solutions, and other needed support (for example, infrastructure and capacity development) specific to each project location and value chains.
- (c) **Development of agri-zone cluster agribusiness development plans (US\$0.90 million).** The agribusiness plans would be developed for each individual agri-zone cluster, involving existing farmer groups, including women and youth farmer groups, newly developed KPs, local value chain actors (small- and medium-scale agribusiness enterprises, including specialized technical service providers, input dealers, product aggregators, processors, and traders), private sector, financial institutions, and relevant governments, building on findings from the value chain assessment. This activity will be carried out by the AIATs in collaboration with relevant working units of the MoA and the respective subnational governments in the following sequence: (i) identification of potential government and private sector partners to support value chain development in selected locations; (ii) series of consultation workshops with government and private sector partners to develop the agri-zone cluster agribusiness development plans, which will outline the areas for potential interventions and/or investments (for example, training, rural roads, irrigation, agri-logistics, and storage); (iii) development of cooperation agreements or MoUs, which outline the roles

⁴³ If the locations are not contiguous, strong justifications should be provided. Locations should still have a functional relationship among them (for example, be part of the same value chain), as well as lie within short distance from one another with good connectivity.



of each stakeholder and the cooperation mechanism needed to operationalize the agri-zone cluster agribusiness development plans. Consultation and collaboration with other Echelon I units within the MoA, participating subnational governments, and potentially other line ministries, is important to maximize convergence with existing relevant public sector programs and optimize resources at both the national and subnational levels. Where possible, the project will be integrated in subnational government planning documents, including each selected district's Medium-Term Regional Development Plan to ensure complementary local public resources are allocated to support the project. Site-specific partners will be identified in close cooperation with provincial and district governments. Several agribusiness companies and agri-tech start-ups have expressed interest to engage with the project. In the consultation workshops with the Government and private sector partners, women's representation will be secured to ensure that agri-zone cluster agribusiness development plans consider women's voices and barriers to participation in the sector.

- (d) **Development of public-private stakeholder platforms (US\$1.13 million)** to enable coordination and joint action in value chain development. Given that the models will follow a market-oriented approach, it would be important to maintain a degree of flexibility in the project design, to allow the project to respond to dynamic market conditions and arising opportunities. The project will facilitate the development of such platforms (or working groups) in each project location to enable public and private actors (as identified through MoUs developed under Activity A.1.c) to convene regularly, discuss, agree on priorities, and adjust strategies for the sectoral and market development of value chains in each project location. The platforms could also be used to facilitate knowledge exchange and foster learning between the different stakeholders, participating districts within the project, and the project and other similar initiatives (Activity C.3). Again, as women bring unique agricultural knowledge and experience and are underrepresented in the sector, ensuring active participation of women and consideration of their experiences in these knowledge exchanges will be crucial.
- (e) **Improving public services for value chain support (US\$6 million).** To function at optimal capacity, the value chain actors need access to a variety of support services. These could include services such as (i) soil testing services to rationalize fertilizer use, (ii) disease identification services, (iii) product quality assurance services (protein content, aflatoxin, mycotoxin, and so on), and (iv) equipment calibration services. The soil testing services will focus on reducing fertilizer usage and recommending appropriate soil fertility enhancement solutions to the farmers. It will also provide facilities for measuring soil carbon content and organic matter to improve soil fertility. The agribusiness development plan will identify the public services that are needed by farmers and other value chain actors. Based on the plan, the project will finance the infrastructure, equipment, tools, machinery, and support services that are required by the MoA to deliver the public support services for the value chain in the project location.



Subcomponent A.2: Supporting the development of Korporasi Petani (IBRD: US\$46.38 million; Beneficiary: US\$9.10 million)

4. The formation of farmer groups in Indonesia has been primarily driven by administrative requirements to be eligible for fertilizer subsidies and therefore has rarely been leveraged to create economies of scale for post-harvest value addition, such as aggregation, quality assurance, packaging, storage, and marketing. The support provided under this subcomponent will be tailored to individual needs and will be packaged to incorporate the following elements:

- (a) **Supporting and facilitating the development of farmer groups into Korporasi Petani (US\$1 million).** The project will facilitate the establishment of KPs from existing farmer groups and/or farmer cooperatives in the area. This will include existing women and youth farmer groups in the area. TA and advisory support will be provided to existing farmer groups in establishing the organizational and governance structure, as well as obtaining legal status for the new KPs. The project will ensure that gender considerations and women's voices are represented in establishing the organizational and governance structure of KPs and will promote a target for women in management positions within KPs. This activity will be carried out by the AIATs in coordination with the Center for Agricultural Extension and the respective provincial and district governments. The project will collaborate with other ministries such as the Ministry of Cooperatives and Small- and Medium-Scale Enterprises which is responsible in providing support to KPs as cooperative with legal status. Where required, third-party service providers will be hired to provide TA and advisory support to facilitate the formation of KPs, including to ensure the participation of women in KPs across the board.
- (b) **Strengthening technical, business, financial, and organizational skills of farmers in groups and Korporasi Petani (US\$7.01 million).** Once established (Activity A.2.a), the newly formed KPs will receive TA and advisory support to strengthen their institutional capacity in managing the organization and business, including to produce goods that meet market requirements and add value, as well as products into value chains, to enhance the profitability and sustainability of their businesses. The support will include training on specific topics, visits to well-established farming and/or processing facilities, and exchanges with successful farmers enterprises or KPs, including those in other ICARE locations. Training topics and themes will include, but not be limited to GAP, efficient production and processing technologies, product quality, food safety, traceability, climate-smart agriculture, digital technologies, and business and financial management. As part of the TA, the project will also provide facilitation support to KPs in the establishment of formal contracts with private agribusiness companies, subject to arising opportunities. Again, women's participation will be prioritized with women KP members constituting at least 30 percent of those who receive TA and advisory support on institutional capacity strengthening (annex 3). The project, by working with women farmers will increase their increase their entrepreneurial, managerial, and technical skills as well as raising their self-confidence and leadership capacities. To ensure women are adequately represented in these trainings, sessions will be designed with gender and age considerations in mind. As women disproportionately shoulder the burden of unpaid domestic work, the timing, structuring, and delivery of dissemination techniques will be designed in line with women farmers'



schedules and needs, as expressed by women and gender consultants where needed. This includes designing dedicated sessions for women. This activity will be carried out by the AIATs in coordination with the AAEHRD of the MoA, Center for Agricultural Extension, and the respective provincial and district governments. IAARD will be responsible in the technical content of the training and the AAEHRD will be responsible in providing training facilities and support partnership with the private sector, industry associations, and financial institutions. Where required, third-party service providers will be hired to provide TA and advisory support to facilitate the formation and strengthen the capacity of the KPs and their members. The project will drive convergence with existing public sector programs in skills training for entrepreneurs, including the MoA's ongoing Millennial Farmers Program. The project aims to start with the training of 5,000 farmers, at least 30 percent of whom will be women, per district, with scope for expansion given available resources and demonstrable demand by farmers.

- (c) **Development of viable *Korporasi Petani* business plans (US\$2 million).** TA and advisory support will be provided to existing farmer groups, including women and youth farmer groups, in the development of business plans for specific commodities in consultation with identified public and private partners, including financial institutions, who will assess their viability. Support will be provided to ensure the KP business plans analyze women's barriers to participation in agricultural business and explore ways to mitigate these barriers. The developed business plans should be linked to the agri-zone cluster agribusiness development plans (Activity A.1.c) to account for local agricultural endowments, farmer capacity, available technological innovations, and market opportunities. Effective support for the identification of business opportunities and development of viable business plans will be critical for ensuring the quality of the business plans, while the successful implementation of these business plans will be a precondition for achieving the project objectives. The project will adopt proven and standard tools for business plan preparation and monitoring and for ensuring long-term sustainability of the businesses supported.
- (d) **Provision of KP matching grants to co-finance initial business needs of *Korporasi Petani* (IBRD: US\$36.37 million; Beneficiary: US\$9.10 million).** Value chain investments to be financed will be identified through the viable KP business plans developed under (Activity A.2.c) and will be linked to the competitive technology grants under Subcomponent B.1 to promote and demonstrate an integrated value chain approach. Complementary investments will come from private sector partners of the KPs, commercial financial institutions, local governments, and from farmer beneficiaries. Investments will promote sustainability and diversification of production systems; collective action among producers; and links with buyers and other value chain stakeholders to gain economies of scale, enhance bargaining power, facilitate knowledge sharing, and reduce production costs. There will be efforts to ensure climate-smart and gender-sensitive proposals are prioritized across all investments. The KP matching grants are expected to help farmer groups adopt more innovative and profitable agriculture production systems, which they may otherwise not do. Precise arrangements and size of contributions will be outlined in the POM. Details may vary depending on the value chain.



Component B: Strengthening institutional capacity for value chain development (US\$44.71 million)
(IBRD: US\$44.71 million)

5. **Component B aims to strengthen public and private sector institutional capacity to deliver climate-smart agriculture technologies and develop value chains in the targeted project locations.** Component B comprises the following subcomponents.

Subcomponent B.1: Collaborative dissemination of priority technologies through partnerships (US\$39.71 million), including climate-smart technologies

6. Building on experiences from the recently completed SMARTD project, this activity will contribute to the acceleration of technology adoption through public-private partnerships in technology dissemination, market-driven advisory, and extension systems. Support will be provided to foster greater private sector participation in the provision of advisory services (as per Law No: 16/2006). This activity will focus on the dissemination of locally adapted technologies, relevant to the agri-zone cluster agribusiness development plans developed under Subcomponent A.1. and the KP business plans under Subcomponent A.2.

- (a) **Awareness creation for competitive technology grants and proposal evaluation (US\$0.48 million)** will be undertaken to ensure relevant value chain actors are aware of the competitive technology grant. An awareness creation campaign comprising posters, pamphlets, social media communication, local radio campaign, dissemination through market centers, workshops, mass media, and so on will be financed by the project. A Grant Evaluation Committee, comprising relevant public and private sector organization as well as farmer representatives, will be established to conduct just and transparent evaluation of the proposals.
- (b) **Provision of competitive technology grants (US\$30 million)** for collaborative climate-smart technology dissemination to support agricultural production systems and value chains, linked to the KP matching grants scheme under Component A. The grants will focus on the adaptation and dissemination of relevant on-the-shelf technologies to support the development of selected value chains. Proposals must incorporate elements of climate-smart agriculture. These may include drought- and flood-tolerant varieties, improved water management technologies, technologies that encourage the shift to clean energy alternatives along the value chains, and climate advisory services, among others. Proposals also including elements of digital technologies, reduction and/or management of agricultural contaminants and waste, food safety, and control of zoonoses will be prioritized. In addition, as women farmers in Indonesia face inequalities in accessing agricultural (and other) technologies, proposals that look to reduce these gaps and promote women's uptake of appropriately designed technologies will be prioritized. Approved technologies will be developed and disseminated in collaboration with appropriate partners, including academia, research institutes (government and nongovernment), and the private sector. The competitive technology grant will also provide support to the implementation of corporate research activities and management. The maximum amount for the competitive technology grants is US\$150,000 and may be in the form of cash and/or in kind. Private entities are expected to provide a matching contribution. The majority of private sector contribution is expected to fall within 30–50 percent of the proposal value. Further details on the



competitive grants implementation arrangements, including provisions on eligibility criteria, negative list for financing, proportion of private sector matching contribution, proposal evaluation process, and so on will be further outlined in the Competitive Technology Grants Operational Manual.

- (c) **Supporting the transfer and adoption of existing and market-relevant technologies (US\$5.23 million)**, including through large-scale demonstrations of climate-smart technologies. This activity will encourage the adoption of new technologies through public-private partnerships and piloting of locally relevant and adapted on-the-shelf technologies (both production and post-harvest technologies, including climate-smart practices, improved crop varieties, and animal breeds) as identified under Subcomponent A.1. This activity will include, among others, the establishment of demonstration plots for selected key technologies, onboarding of agribusiness MSMEs (for example, agri-kiosks) and other local value chain actors to support the dissemination and piloting of new technologies, as well as training for agribusiness MSMEs and farmers on the use of newly disseminated technologies. As evidence shows that women farmers in Indonesia lack access to agricultural technology, the project will ensure that KWTs are included in technical dissemination activities in significant numbers. This will be done by ensuring sessions are designed with gender and age considerations in mind. Because women disproportionately shoulder the burden of unpaid domestic work—such as childcare—the timing, structuring, and delivery of dissemination techniques will be designed in line with women farmers schedules and needs, as expressed by the women. This includes designing dedicated sessions for women. Testing and piloting of digital technologies will also include women farmers, to ensure that the design and delivery of these technologies are gender sensitive and gender inclusive to help bridge the gender digital divide.
- (d) **Mainstreaming the use of digital technologies to address value chain bottlenecks in agriculture (US\$4 million)**. Digital technology will be at the core of improving efficiency in crop production, aggregation, quality assurance, logistics and marketing, thereby reducing costs, enhancing access to markets, and increasing competitiveness. The project will support mainstreaming digital agriculture interventions in the project through public-private partnerships with digital agriculture technology providers in integrating and scaling up existing solutions in relevant value chains, including through the development of a digital agriculture center of excellence, building on the MoA's *Kostratani* network at the sub-district level. In recent years, Indonesia has witnessed a proliferation of agricultural technology start-ups offering a wide range of digital solutions for agriculture, including in the areas of digital information provision, data management and supply chain, market access facilitation, digital financial services, and precision agriculture. However, many of these enterprises still operate at a limited scale due to resource constraints. The project would foster collaboration in digital agriculture between agricultural technology start-ups with local governments and the public agriculture innovation and extension systems to adapt, test, and promote existing digital solutions in selected value chains, as well as record best practices and lessons learned for further scaling up and replication in other areas. There may also be scope to support the strengthening of the necessary enabling environment related to the mainstreaming of digital agriculture through policy and regulatory review, which could be linked to the ongoing Transforming Indonesia's Agri-Food System Advisory Services and Analytics (ASA) and Digital



Agriculture ASA. Digital technologies focusing on agro-meteorology information, plant protection services, soil fertility improvement, and improved irrigation management could help farmers better adapt to changing climate. On the other hand, technologies contribution to reduced post-harvest losses, improving supply chain efficiency, and automating irrigating and cold chain infrastructure will contribute to reduced energy usage and reduced overall emissions.

Subcomponent B.2: Institutional capacity building (US\$5 million)

7. To support the implementation of the agri-zone cluster agribusiness development plans under this subcomponent, the project will strengthen the capacities of value chain actors (for example MSMEs, start-ups, processors, and so on) and financial institutions to engage in value chain partnerships and public sector personnel (technical staff of the MoA, relevant provincial and district governments, and extension workers) to facilitate the development of such partnerships and in delivering public services in agriculture. The content of trainings and types of public services delivered should align with agri-zone cluster agribusiness development plans developed. This component will finance the following:

- (a) **Strengthening the capacity of value chain actors (US\$3 million)** (micro-, small- and medium-scale agribusiness enterprises, including specialized technical service providers, input dealers, product aggregators, processors, traders, and commercial financial institutions) to support better value chain integration. Value chain actors play an important role in building farmer capacity, in encouraging the adoption of new technologies (by providing advice and recommendations on input use and pest/disease management), and in facilitating farmers' access to finance (for example, through value chain financing). Therefore, the project seeks to enhance the capacities of local agribusiness MSMEs and other value chain actors to (i) strengthen their partnerships with farmers, KPs, financial institutions, and the large private sector and (ii) contribute to value addition in selected value chains, by producing better goods and services. The project will support trainings on a variety of topics (for example, efficient production and processing technologies, business and financial management, marketing, and the use of digital tools), the provision of advisory to entrepreneurs in establishing enterprises, facilitation of dialogues with potential partners, and visits/exchanges to well-established agribusiness firms/facilities. This will also include working together with commercial financial institutions to better deliver financial services (that is, credit, savings and insurance) to farmers, KPs, and other value chain actors, to enable them to adopt practices and make investments to enhance value addition and climate resilience. This will be achieved through (i) training for financial institutions on topics such as agribusiness proposal evaluation, risk management, and value chain financing; (ii) training facilitated by financial institutions to value chain actors on loan proposal development, financial management, and managing risks through financial products; and (iii) TA to facilitate development of value chain financing arrangements.⁴⁴ Trainings would also target women-led agribusiness MSMEs, and/or household industries that typically engage in the post-harvest processing of agricultural products.

⁴⁴ Items (ii) and (iii) will also be delivered to farmers.



- (b) **Training for public sector personnel (US\$2 million)**, including staff of the MoA and aligned ministries, subnational governments, and extension workers. This activity will include relevant short-term technical and long-term training for technicians, exchange visits, and so on. This will include, among others, (i) training for government staff to enhance their capacity in facilitating local agriculture value chain development and agriculture finance (including in facilitating value chain financing arrangements between farmer groups, value chain actors, and financial institutions to support post-project continuation of TA under Activity B.2.a) and (ii) training of trainers, including internships and apprenticeships in the private sector, with a focus on enhancing capacity of extension staff and capacity of other local technical staff to support the agricultural and food production system and value chains at the subnational level. The latter will include training for women facilitators, to deliver training for women farmers and value chain actors, particularly in locations where cultural norms require such arrangements.

Component C: Project management (Total US\$10 million [IBRD: US\$0; GoI: US\$10 million])

8. **Component C will finance effective project management and facilitate learning and knowledge management to ensure that project successes are mainstreamed.** This component will cover the following activities:

- (a) **Project management (US\$3.35 million).** The activities are coordination; implementation; financial management; environmental and social risk management; and monitoring at the national, province and district levels. It will include staff and consultant expenses, procurement of resource/support agencies and service providers, office infrastructure, logistics support, information and communication technology-mediated citizen engagement systems, and other operational expenses (such as travel cost and preparing project manuals)
- (b) **M&E (US\$3 million).** A project-level M&E system will be established as part of the project's management structure with a robust MIS, with GIS capabilities (for example, GEMS) to allow effective project monitoring across a wide range of geographies (that is, nine districts). This component will include innovative M&E tools and process monitoring to ensure course corrections as appropriate, project reporting, baseline study, and evaluation of the project at midterm and end of project to ensure an evidence-based scale-up. The EFA will be an integral part of the project's M&E system. Given ICARE's project approach, which focuses on developing value chain models across a diverse range of geographies and commodities, an effective M&E system would be crucial to monitor and assess project achievements and collect evidence to serve as a basis for further replication in other areas.
- (c) **Knowledge management for scaling up and mainstreaming (US\$3.65 million).** This subcomponent will focus on documenting processes, approaches, and learnings derived from the development of KP models and implementation of climate-smart agricultural practices; as well as facilitating knowledge exchange to support the GoI's objective of scaling up successful KP models at a national scale, while promoting practices and technologies that enhance the agriculture sector's resilience to climate change and reduce its emissions footprints. This activity will finance studies/assessments to evaluate models developed by the project, as well as the preparation of policy briefs/reports, workshops/learning events, and other communication materials to disseminate findings to a wider audience. This would



also include activities to incentivize competition, good performance, and learning among farmer groups and KPs (including, for example, around the adoption of climate-smart agricultural practices and digital technologies, successful business models, KP management best practice) such as organizing annual KP meetings to showcase success stories; peer-to-peer, and cross-country exchange and learning event/visits; creation of a KP community of practice; communication channels, and materials including social media.



ANNEX 3: Summary of Gender Analysis, Proposed Actions, and Results Indicators

COUNTRY: Indonesia
Agriculture Value Chain Development Project (ICARE)

Gender Gap	Action	Results (Indicators)
<p>Women represent 24% of farmers⁴⁵ and shoulder 40% of farm work⁴⁶ in Indonesia. However, they have little access to financial resources, information, and technology to improve their crop yields and livelihoods. Women have less access to productive resources, agricultural extension, and information technology, in part because of a traditional division of labor which sees women shoulder a disproportionate share of unpaid care and domestic work. Female household heads are even more limited in their access to these resources. Women agricultural workers' lack of access to vital resources, including technology and productive assets, represents a significant gender gap in the agriculture sector.⁴⁷</p>	<p>To address this gap, the project, under Subcomponent B.1, will ensure that women farmers and value chain actors (including female household heads) have access to adopt the technologies piloted under the project by arranging dedicated technical dissemination activities for women farmers. Further, the timing, structure, and delivery of all dissemination activities and trainings will be designed to maximize women's participation, considering women's barriers to participation, including care and domestic work responsibilities.</p> <p>Further, through Subcomponent B.1, provision of competitive technology grants for collaborative technology dissemination to support agricultural production systems and value chains—proposals that look to reduce the barriers women face in the agriculture sector and promote women's uptake of appropriately designed technologies will be prioritized and promoted.</p>	<p>Women's adoption of technologies piloted through the project will be measured through the indicator 'Farmers adopting improved agricultural technology - Female'.</p> <p>The target for this results chain is 18,750, which represents 25% of the total 70,000 targeted farmers adopting improved agricultural technology through the project.</p>
<p>Women's access to activities in cooperatives is limited in Indonesia with men dominating the membership and leadership of agricultural organizations and cooperatives, which play a crucial role in community-level</p>	<p>Recognising the gap in women's representation in farmers cooperatives, including in key roles within these organisations, the project—through Subcomponent A.2—will facilitate significant women's representation in the</p>	<p>The project will target a minimum of 25% of women in senior management positions of KPs formed under the project.</p>

⁴⁵ Statistics Indonesia. 2018. *Agriculture Intercensal Survey*.

<https://www.bps.go.id/publication/2019/10/31/9567dfb39bd984aa45124b40/hasil-survei-pertanian-antar-sensus--sutas--2018-seri-a2.html>.

⁴⁶ FAO (Food and Agriculture Organization). 2019. *Country Gender Assessment of Agriculture and The Rural Sector in Indonesia*. <https://reliefweb.int/sites/reliefweb.int/files/resources/ca6110en.pdf>.

⁴⁷ FAO. 2019. *Country Gender Assessment of Agriculture and the Rural Sector in Indonesia*. <https://reliefweb.int/sites/reliefweb.int/files/resources/ca6110en.pdf>.



Gender Gap	Action	Results (Indicators)
<p>agricultural decision-making processes.⁴⁸ Women are an important target group of project interventions but are often overlooked in the design of agricultural projects, despite the fact that women play key roles in managing household finances, including finances used in agriculture.⁴⁹ Women are typically less involved in all kinds of groups and associations than men, which is a significant disadvantage in agricultural development because individuals without group affiliation are less visible to government representatives, less likely to receive training, benefit from bulk buying, or gain access to other resources.⁵⁰</p> <p>Data on the proportion of women in <i>Korporasi Petani</i> senior management positions is not available, but as mentioned above FAO analysis shows women's access to activities in cooperatives is limited⁵¹. Data from other sectors also shows that women's representation in leadership and senior management positions is very low across the board in Indonesia. For example, at the provincial level, women's parliamentary representation remains approximately 18%⁵², and a recent private-sector focused survey found that only 15% of</p>	<p>cooperatives formed under the project by targeting and recruiting dedicated KWTs for inclusion, and also including women members of general farmer groups in the project. The project will also actively promote women's involvement in planning and decision-making positions and processes, including by establishing gender-responsive governance structures of the KPs and policies aimed at gender and social inclusion. Under Subcomponent B.2, the project will also include training for trainers for women facilitators, to deliver training for the women farmers and value chain actors, particularly in locations where cultural norms require such arrangements.</p>	

⁴⁸ FAO. 2019. *Country Gender Assessment of Agriculture and the Rural Sector in Indonesia*. <https://reliefweb.int/sites/reliefweb.int/files/resources/ca6110en.pdf>.

⁴⁹ WRI (World Resources Institute). 2020. Land Ownership and Women Empowerment.

⁵⁰ AIP-PRISMA (Australia-Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture). 2014. Gender and Social Inclusion AIP-PRISMA Strategy Report. Available at https://aip-prisma.or.id/data/public/uploaded_file/08.12.16_Final%20Draft%20Gender%20and%20Social%20Inclusion%20PRISMA.pdf.

⁵¹ FAO. 2019. *Country Gender Assessment of Agriculture and the Rural Sector in Indonesia*. <https://reliefweb.int/sites/reliefweb.int/files/resources/ca6110en.pdf>.

⁵² Aspinall E, White S, Savirani A. Women's Political Representation in Indonesia: Who Wins and How? *Journal of Current Southeast Asian Affairs*. 2021;40(1):3-27. doi:[10.1177/1868103421989720](https://doi.org/10.1177/1868103421989720)



Gender Gap	Action	Results (Indicators)
enterprises reported having a female CEO. ⁵³		
Women lack access to finance due to conditions of finance that are heavily gendered and often rely on land for collateral. However, research shows that in many regions, women lack access to land titles. For example, in Java, around 65% of the land of married couples is registered under the husband's name. ⁵⁴	Recognizing that women face barriers to accessing credit, the project, through Subcomponent B.2 will support the introduction of appropriate collateral-alternatives in commercial credit schemes.	—

⁵³ ILO. 2020. 'Leading to Success: The business case for women in business and management in Indonesia'. Available at: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/publication/wcms_750802.pdf

⁵⁴ USAID (US Agency for International Development). 2016. Indonesia Country Profile: Property Rights and Resource Governance.



ANNEX 4: Economic and Financial Analysis

COUNTRY: Indonesia **Agriculture Value Chain Development Project (ICARE)**

Introduction

1. An EFA of the project has been undertaken to assess its economic soundness and to estimate the economic and financial impacts at two levels: (a) economic impact of the project from the point of view of society resulting from the overall investment project and (b) financial impacts of the investments in agricultural production and value chains supported by the project on farmers.
2. The EFA considers the project costs and project outreach assumptions at the time of appraisal (January 2022). The assumptions for the economic analysis are aligned with the targets for the project's Results Framework indicators related to (a) number of farmers reached with agricultural assets or services and (b) number of farmers adopting improved agricultural technologies.
3. Sensitivity analyses have been conducted to assess the impact of changes in main parameters affecting the economic outcome of the project as a result of (a) changes in project costs, (b) changes in number of farmers directly and indirectly supported realizing benefit, (c) changes in the estimated benefits realized by farmers directly and indirectly supported, and (d) delays in project execution due to the risks that have been identified in the project's risk analysis.
4. The results of the EFA are summarized below⁵⁵. It is expected that the EFA will be periodically updated as an integral part of the project's M&E system for the monitoring of the performance of the farmers and other value chain actors supported by the project and as an input into the project evaluation at midterm and completion stage.

Economic Analysis

5. The main economic project benefits will come from increased incomes of project farmers resulting from (a) adoption of productivity-enhancing and climate-smart/climate-resilient technologies and practices for the commodities promoted by the project; (b) diversification of production into higher-value commodities; (c) enhanced value-adding activities; and (d) better integration of farmers into food crops, horticulture, estate crops, and livestock value chains. It is expected that the project will directly support and benefit around 17,700 farmers who will be organized into farmer group enterprises/KPs as well as reach at least another 72,300 farmers in the project locations who may benefit from trainings or investments made in the value chain in the project area, including improved market access and information.⁵⁶ Furthermore, other relevant value chain actors of the selected commodities in the project locations will also benefit.

⁵⁵ More details are provided in the EFA Appendix Tables in the Project File, available upon request to the task team.

⁵⁶ PDO indicator4: Number of farmers reached with agricultural assets or services = 90,000.



6. The project will also contribute to improved nutrition including more dietary diversity, through enhanced domestic supply and lower prices for domestic consumers of these commodities, thereby helping nutritious food become more affordable for the population. Furthermore, the project is expected to generate substantial employment opportunities for on-farm labor (in production, handling, processing, and marketing of incremental production).

7. The monetary value of the GHG reduction benefits has been estimated and considered as economic benefits of the project in the EFA (see annex 5 and table 4.2). It should be noted that the project will support many investments related to the reduction of FLW which are not accounted for, as a detailed analysis of post-farm gate GHGs emitted or avoided along the agro-value chain through investments in (a) post-harvest handling and storage, (b) processing, and (c) distribution has not been attempted due to lack of data. However, the potential benefits have been described in annex 5 (based on Interim Guidance Note on Demonstrating Substantiality). These benefits will be estimated during project implementation once sufficient data are available, using the EX-ACT version for value chains, and again at project completion.

8. On the basis of the available data from the financial analyses conducted (see below) and other sources, the following assumptions were made for the base case scenario: (a) 80 percent of farmers who are members of a KP and 70 percent of farmers reached with agricultural assets or services who are not members of a KP will realize benefits from the project and (b) the estimated average incremental benefit realized per farmer and year is IDR 8,000,000 and IDR 4,000,000 for the KP farmers and supported non-KP farmers, respectively (see table 4.1).

Table 4.1. Links between Results Framework Indicators' Targets and Assumptions for EFA

No.	Description	Value
1	Total number of farmers engaged in supported commodities in all project locations	185,070
2	Number of farmers supported who are members of a KP	17,689
3	Number of farmers in all project locations who are not members of KPs	167,381
4	Total number of farmers reached with agricultural assets or services ^a	90,000
5	Number of farmers reached with agricultural assets or services not members of a KP ^b	72,311
6	% of members of KPs realizing benefits	80
7	Number of members of KPs realizing benefits	14,151
8	% of farmers reached with agricultural assets or services (not member of a KP) realizing benefits	70
9	Number of farmers reached with agricultural assets or services (not member of a KP) realizing benefits	50,618
10	Number of farmers adopting improved agricultural technology ^c	70,000
11	Number of farmers realizing benefits [7 + 9]	64,769
12	Estimated average incremental benefits realized (IDR/farmer/year) ^d	
	i) By farmers who are members of a KP realizing benefits	8,000,000
	ii) By farmers reached with agricultural assets or services who are not members of a KP realizing benefits	4,000,000

Note: a. PDO indicator 4.

b. (4–2) Farmers who may benefit from trainings or from investments made in the value chains supported in the project area, including improved market access and information.

c. Intermediate Results Indicator A7.

d. With-project' scenario above 'without-project' scenario. Assumed to be realized two years after support.



9. The EIRR of the project has been calculated over a 20-year period for three base-case scenarios (without carbon reduction benefits and two scenarios of shadow price of carbon). Economic project costs have been estimated by removing taxes⁵⁷ paid by the project as these are transfer payments and not economic costs. The EIRR for the base case is 15.7 percent for the without-carbon-reduction-benefits scenario, and 15.7 percent and 15.8 percent for the low and high shadow price of carbon scenarios, respectively (given the rather marginal carbon sequestration benefits estimated—rounded to one decimal).

10. Sensitivity analyses have been conducted to assess the impact of changes in main parameters affecting the economic outcome of the project as a result of (a) changes in project costs, (b) changes in number of farmers supported realizing benefit, (c) changes in the estimated benefits realized by farmers directly and indirectly supported, and (d) delays in project execution due to the risks that have been identified in the project's risk analysis. The results show that the project remains economically viable also in the case of adverse changes in project costs and benefits (see tables 4.2 and 4.3). It should be noted that the analysis is only based on the estimated benefits at farmer level and does not consider the potentially high benefits that may be realized by other value chain actors. Furthermore, potential benefits from improved food and nutrition security and environmental benefits (including reduced GHG emissions in the long run) have not been estimated in economic terms.

Table 4.2. Project Economic Outcome and Sensitivity Analysis

Scenario			EIRR (%)	NPV (US\$, millions)	NPV (IDR, millions)
Base case (without GHG reduction benefits)			15.7	59.9	856,346
Base case (with GHG reduction benefits - low) ^a			15.7	60.3	862,260
Base case (with GHG reduction benefits - high) ^b			15.8	60.7	868,171
Changes ^c					
Project Costs (%)	Benefits (%)	Benefits delayed by			
-10%			17.7	69.5	993,597
+10%			14.0	50.3	719,095
+20%			12.6	40.7	581,844
	-10		13.8	44.3	633,461
	-20		11.9	28.7	410,575
	+10		17.5	75.5	1,079,232
	+20		19.2	91.1	1,302,118
+10%	-10		12.3	34.7	496,210
+20%	-20		9.1	9.5	136,073
Base Case (%)		1 year	13.2	44.0	628,534
		2 years	11.3	29.2	417,597
		3 years	9.7	15.5	222,285
	-10	1 year	11.7	30.0	428,430
		2 years	9.9	16.7	238,586
		3 years	8.5	4.4	62,805
Switching Values (%) ^d					
Costs	+62		8.0	0	0
Benefits	-39%		8.0	0	0

Note: EIRR = Economic Rate of Return; NPV = Net Present Value (at 8 percent discount rate).

a. Low shadow price of carbon scenario: GHG reductions valued at US\$42/ton CO₂eq (starting in 2022 with average annual increases of 2.25 percent, reaching US\$63/ton CO₂eq in 2040).

⁵⁷ Component C costs financed by the GoI are subject to tax (value added tax and income tax), while Components A and B costs are exempted from tax (covered by the GoI and consequently not included in project costs).



b. High shadow price of carbon scenario: GHG reductions valued at US\$84/ton CO₂eq (in 2022), reaching US\$125/ton CO₂eq in 2040. Based on World Bank. 2017. *Guidance Note on Shadow Price of Carbon in economic analysis*. c. Compared to base-case scenario (without GHG reduction benefits).

d. Percentage change in cost or benefit streams to obtain an EIRR of 8 percent, that is, economic viability threshold.

Table 4.3. Assumptions and Detailed Sensitivity Analyses (EIRR) [Base-Case-Scenario] (without GHG Reduction Benefits)

		Of Farmers Who Are Members of a KP		Of Farmers Reached with Agricultural Assets or Services not Members of a KP		
% of farmers realizing benefits resulting from project		80		70		
Estimated average incremental benefits realized ^a (IDR million per farmer per year)		By Farmers Who Are Members of a KP Realizing Benefits				
		6.00	7.00	8.00	9.00	10.00
By farmers reached with agricultural assets or services not member of a KP that are realizing benefits	2.40	8.9%	9.8%	10.8%	11.7%	12.6%
	3.20	11.5%	12.4%	13.3%	14.2%	15.0%
	4.00	14.0%	14.9%	15.7%	16.5%	17.3%
	4.80	16.3%	17.1%	17.9%	18.7%	19.5%
	5.60	18.5%	19.3%	20.1%	20.8%	21.5%
		Of Farmers Who Are Members of a KP		Of Farmers Reached with Agricultural Assets or Services not Members of a KP		
% of farmers realizing benefits resulting from project		90		80		
Estimated average incremental benefits realized ^a (IDR million per farmer per year)		By Farmers Who Are Members of a KP Realizing Benefits				
		6.00	7.00	8.00	9.00	10.00
By farmers reached with agricultural assets or services not member of a KP that are realizing benefits	2.40	10.7%	11.8%	12.8%	13.8%	14.7%
	3.20	13.6%	14.6%	15.5%	16.4%	17.3%
	4.00	16.3%	17.2%	18.1%	19.0%	19.8%
	4.80	18.8%	19.7%	20.5%	21.3%	22.2%
	5.60	21.2%	22.0%	22.8%	23.6%	24.4%
		Of Farmers Who Are Members of a KP		Of Farmers Reached with Agricultural Assets or Services not Members of a KP		
% of farmers realizing benefits resulting from project		70		60		
Estimated average incremental benefits realized ^a (IDR million per farmer per year)		By Farmers Who Are Members of a KP Realizing Benefits				
		6.00	7.00	8.00	9.00	10.00
By farmers reached with agricultural assets or services not member of a KP that are realizing benefits	2.40	6.8%	7.8%	8.7%	9.5%	10.4%
	3.20	9.3%	10.2%	11.0%	11.8%	12.6%
	4.00	11.6%	12.4%	13.2%	13.9%	14.7%
	4.80	13.7%	14.5%	15.2%	15.9%	16.6%
	5.60	15.7%	16.4%	17.1%	17.8%	18.5%

Note: a. 'With-project' scenario above 'without-project' scenario. Assumed to be realized two years after support.



Financial Analysis

11. The financial analysis, which provides the foundation for the economic analysis of the project, has been carried out for 18 representative production models⁵⁸ that were developed in close collaboration with experts from the provincial AIATs for the 15 commodities supported by the project in 14 agri-zone clusters across the nine selected districts (see table 4.4). For each production model, there are two scenarios: (a) with project (reflecting abovementioned improved technologies/practices and benefits from farmers' being organized in KPs) and (b) without project (reflecting the existing technologies/practices and farmers' organization). For each production model analyzed, value added, gross margin, net profit, return to labor, and internal rate of return (as appropriate) have been calculated.

Table 4.4. Project Locations and Commodities

Subsector	Commodity	Location
Horticulture	Potato	West Java (Kab. Garut)
		South Sulawesi (Kab. Gowa)
	Mango	East Java (Kab. Pasuruan)
	Citrus	West Kalimantan (Kab. Sambas)
	Banana	Central Java (Kab. Brebes)
Livestock	Goat	Lampung (Kab. Tanggamus)
	Sheep	West Java (Kab. Garut)
	Beef cattle	Southeast Sulawesi (Kab. Kolaka Timur)
	Dairy cattle	South Sulawesi (Kab. Gowa)
	KUB chicken	West Nusa Tenggara (Kab. Lombok Tengah)
Estate crops	Coffee	Lampung (Kab. Tanggamus)
	Cocoa	Southeast Sulawesi (Kab. Kolaka Timur)
	Coconut	North Sulawesi (Kab. Minahasa Utara)
Food crops	Lowland rice	Central Java (Kab. Brebes)
	Upland rice	West Kalimantan (Kab. Sambas)
	Maize	East Java (Kab. Pasuruan)
		North Sulawesi (Kab. Minahasa Utara)
		West Nusa Tenggara (Kab. Lombok Tengah)

12. While most AIATs prepared detailed crop and livestock enterprise budgets for the with-project scenario, there is still a need to validate some of the production parameters and price assumptions. Furthermore, for several production models, no without-project or with-project production models have been prepared, which would be required to be able to estimate incremental benefits resulting from the project.

13. Although these financial analyses should be the building blocks for the economic analysis of the project, given the data gaps as well as the complexity of the project and the difficulties to develop models that represent such a wide range of production systems supported, a different approach was taken as described above (based on assumptions for (a) percentage of farmers supported realizing benefits resulting from project, and (b) estimated average incremental benefits realized by farmers. Table 4.5 presents the estimated net profit per year and production unit (without-project and with-project) for

⁵⁸ The project will support up to two commodities in each of the nine districts.



the models analyzed based on the available data.

Table 4.5. Summary of Results of Financial Analysis of Production Models Proposed

Province	Commodity	Production Unit	Net Profit Per Year and Production Unit (IDR)			Average Number of Production Units per Household	Incremental Net Profit/Household per annum (IDR)
			Without Project	With Project	Incremental		
West Java	Potato	ha	13,470,000	85,320,000	71,850,000	0.5	5,925,000
	Sheep	HH	12,322,500	38,967,250	26,644,750	1.0	26,644,750
Central Java	Banana	ha	77,223,150	109,268,000	32,044,850	0.5	16,022,425
	Lowland rice	ha	15,906,250	64,856,250	48,950,000	0.5	24,475,000
East Java	Mango	ha	54,933,220	n.a.	n.a.	0.5	n.a.
	Maize	ha	8,160,000	41,370,572	33,210,572	0.4	13,284,229
Lampung	Coffee	ha	10,592,300	16,655,438	6,063,138	2.0	12,126,277
	Goat	HH	2,519,133	47,786,667	45,267,533	1.0	45,267,533
West Kalimantan	Citrus	ha	1,573,904	14,461,435	12,887,530	0.5	6,443,765
	Upland rice	ha	6,713,083	22,284,083	15,571,000	0.3	4,671,300
North Sulawesi	Coconut	ha	7,347,696	n.a.	n.a.	0.8	n.a.
	Maize	ha	12,310,000	20,080,000	7,770,000	0.8	6,216,000
	Integrated	ha	8,568,943	n.a.	n.a.	0.8	n.a.
South Sulawesi	Potatoes	ha	35,940,000	183,940,000	148,000,000	0.5	74,000,000
	Dairy	HH	132,800,000	n.a.	n.a.	1.0	n.a.
Southeast Sulawesi	Cocoa	ha	n.a.	16,466,470	n.a.	2.0	n.a.
	Beef cattle	HH	2,742,000	68,400,000	65,658,000	1.0	65,658,000
West Nusa Tenggara	Maize	ha	n.a.	12,695,000	n.a.	0.4	n.a.
	Chicken	HH	n.a.	336,413,807	n.a.	1.0	n.a.

Note: HH = Household;

n.a. Missing models need to be prepared, data gaps to be filled, and assumptions to be clarified.

All models should be revisited and validated once AIATs have identified officers available for this purpose.

14. The financial analysis has informed the project design and costing as it helped (a) identify economically viable and financially sustainable production activities in the food crops, horticulture, estate crops, and livestock value chains and (b) estimate the amount of KP matching grant that would be required for supporting the targeted number of farmers. The templates that have been prepared for the financial analysis can be used during project implementation for planning (for example, as part of the business plan that will be required for the application for KP matching grants under the project) and monitoring of the economic impact at the household and entrepreneur level.



15. Given the importance of ensuring that only economically viable and financially sustainable agricultural production and value chain activities are supported by the project (which need to be climate-smart), it is critical that adequate capacity exists in project AIATs to supervise the process of business planning and monitoring under the project. In this regard, it is suggested to have a series of sessions with relevant officers from AIATs before project implementation starts to introduce the approach to the financial analysis and the templates used (in particular as the officers who had been working on the financial analysis models are not anymore available due to the IAARD-BRIN restructuring). These sessions would also provide an opportunity to fill the abovementioned data gaps.

16. Effective support for the identification of business opportunities and development of viable business plans will be critical for ensuring the quality of the business plans, while the successful implementation of these business plans will be a precondition for achieving the project objectives. It would be beneficial to use a proven and standard tool (for example, RuralInvest) for business plan preparation and monitoring and for ensuring long-term sustainability of the businesses supported. Capacity development of relevant AIAT officers in application of the selected tool should be part of project start-up activities.

Conclusion

17. It can be concluded that, even without capturing all potential economic project benefits (for example, resulting from improved food and nutrition security and environmental benefits—including reduced GHG emissions in the long run—that are difficult to capture in economic terms), and on the basis of conservative assumptions, the project can be justified on economic grounds. The financial analyses of representative agriculture production models to be supported by the project have clearly shown their economic viability and potential for financial sustainability. It should be kept in mind that likely multiplier effects have not been quantified, such as (a) increased Government tax revenues resulting from increased output, income, and employment and (b) additional income and employment effects due to increased economic activities related to the supported value chains. Therefore, it is safe to assume that the estimated economic benefits are on the low side of the potential economic returns which can be expected when the project is implemented.



ANNEX 5: Greenhouse Gas Accounting

COUNTRY: Indonesia

Agriculture Value Chain Development Project (ICARE)

1. **Motivation.** The World Bank Environment Strategy (2012) adopted a corporate mandate to account for the GHG emissions for investment lending. The quantification of GHG emissions is an important step in managing and ultimately reducing emissions as it provides an understanding of the project's GHG mitigation potential and can support sectoral strategies toward low-carbon development.
2. **GHG accounting methodology.** The World Bank has adopted EX-ACT, developed by the FAO in 2010⁵⁹ to estimate the impact of agricultural investment lending on the GHG emission and carbon sequestration in the project area. EX-ACT allows the assessment of a project's net carbon balance, which is defined as the net balance across all GHGs expressed in CO₂ equivalents that will be emitted or sequestered due to project implementation (with project), as compared to a business-as-usual scenario (without project). EX-ACT was designed mostly using data from the Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories (2006 and updated with 2019 data), which furnishes EX-ACT with recognized default values for emission factors and carbon values in soils and biomass.
3. **Assumptions in the EX-ACT model.** The project proposes several activities that were captured with the GHG accounting tool EX-ACT. The assumptions for this analysis were informed by comprehensive discussions and engagement with the client and various stakeholders during project preparation. The assumptions are aligned to the assumptions of the EFA presented in annex 4. The project area covers nine regions in Indonesia. The climate and moisture regime is assumed to be warm and wet tropical. The dominant soil type is high-activity clay soils. The project implementation duration is 5 years,⁶⁰ and the capitalization period is assumed to be 15 years. Dynamics of implementation are assumed to be linear over the project period. Default Tier 1 coefficients are used. The project aims to increase agricultural productivity and incomes through development of agricultural value chains and access of smallholder farmers targeted by the project. It is expected that the project will directly support and benefit around 17,700 farmers who will be organized in farmer group enterprises/KPs as well as reach at least another 72,300 farmers in the project locations who may benefit from trainings or investments made in the value chain in the project area, including improved market access and information (see annex 4). Benefits will accrue to farmers through increased agricultural productivity due to increase in crop yields through GAP, increased access to assets, inputs, and irrigation. Incomes will also increase due to an increase in access to markets and value chain development.
4. The data and inputs into the GHG calculations and related assumptions are summarized in table 5.1. Data inputs were aggregated by commodity across all the regions under the project. Table 5.2 summarizes the assumptions regarding the use of fertilizer and agro-chemicals for the without-project and with-project scenarios.

⁵⁹ <http://www.fao.org/tc/exact/ex-act-home/en/>.

⁶⁰ Key project activities will take place during the first five years of the project. Year 6 will focus on project completion and evaluation.



Table 5.1. Data Inputs to EX-ACT in the without-Project and with-Project Scenario

Crop	Area Planted (ha)		Yield (MT/ha)	Area Change	Management with Project		
	Without Project	With Project			Tillage	Organic Input	Residue
Perennial crops							
Coffee	2,902	2,902	0.7	No	Full	Medium C	Retained
Cocoa	2,200	2,200	0.4	No	Full	Medium C	Retained
Coconut	82	82	1.3	No	Full	Medium C	Exported
Citrus	250	250	10.0	No	Reduced	High C, manure	Retained
Mango	720	720	5.6	No	Reduced	Medium	Retained
Banana	1,000	1,000	30.9	No	Reduced	Medium C	n.a.
Annual crops							
Upland rice (tidal irrigation)	500	500	7.2	No	Full	Medium C	Retained
Lowland rice	1,000	1,000	5.0	No	Reduced	Medium C	Exported
Maize	1,737	1,737	5.0	No	Reduced	Medium C	Exported
Potatoes	1,099	1,099	12.5	No	Full	High C, manure	Retained
Livestock	Population (head)				Management with Project		
	Start	Without Project	With Project				
Chicken	12,000	505	18,000		Improvements in feeding		
Goat	4,353	202	29,020		Improved feeding		
Dairy	500	1,234	625		Improved locally sourced feed, and breeds		
Beef cattle	200	4,470	300		Improved locally sourced feed, and breeds		
Sheep	1,200	12,120	2,000		Improved feeds through locally sourced feed		

Note: C= Carbon.

Table 5.2. Data Inputs to EX-ACT for Consumption of Fertilizer and Agro-chemicals in the without-Project and with-Project Scenario

Inputs	Amount (t/year)	
	Without Project	With Project
Urea	615.5	630
Nitrogen	800.0	1,009
Potassium	542.0	668

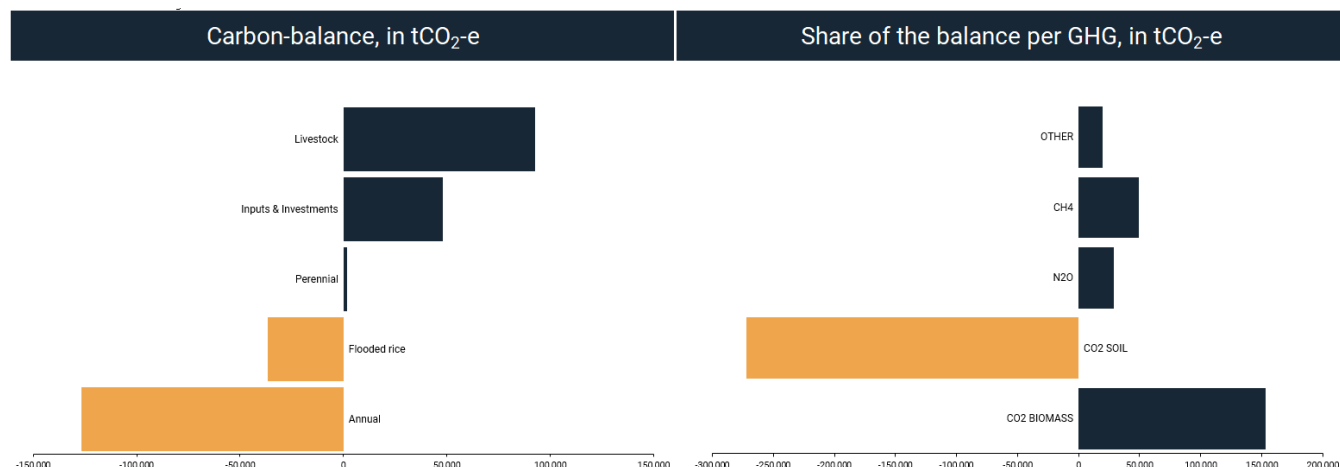
5. **Results** show that the project can be an absolute gross carbon sink, with -593,061 (-12,429)⁶¹ tCO₂eq over 20 years and -29,653 (-621) tCO₂eq annually. This is largely due to the positive effects of improved cropland management in annual crops and rice, where improved techniques would be applied. The net effect of the project, relative to the without-project situation is such that the project constitutes a net carbon sequester with a net carbon balance of -20,591 tCO₂eq during the project lifetime and annual

⁶¹ Values in brackets are for coconut, which was calculated separately.



net mitigation potential of $-1,029^{62}$ tCO₂eq per year. Carbon sequestered in soils is the primary contributor to the mitigation potential.

Table 5.3. Detailed EX-ACT Results



DETAILED RESULTS

Project name	I-CARE	Project duration (in years)		Total area (ha)	9,908	Global warming potential	
Continent	South-eastern Asia	Implementation	5	Mineral soil	9,908	CO ₂	1
Country	INDONESIA	Capitalization	15	Organic soil	0	CH ₄	34
Climate	Tropical	Period analysis	20	Waterbodies	0	N ₂ O	298
Moisture	Wet						

GROSS FLUXES				SHARE PER GHG OF THE BALANCE					AVERAGE ANNUAL EMISSIONS		
In tCO ₂ -e over the whole period analysis				In tCO ₂ -e over the whole period analysis					In tCO ₂ -e/yr		
PROJECT COMPONENTS	WITHOUT	WITH	BALANCE	CO ₂ BIOMASS	CO ₂ SOIL	N ₂ O	CH ₄	ALL NON-AFOU EMISSIONS*	WITHOUT	WITH	BALANCE
Land use changes											
Deforestation	0	0	0	0	0	0	0		0	0	0
Afforestation	0	0	0	0	0	0	0		0	0	0
Other land-use	0	0	0	0	0	0	0		0	0	0
Annual	158,797	31,839	-126,958	0	-124,612	-2,346	0		7,940	1,592	-6,348
Cropland											
Perennial	-1,110,998	-1,109,455	1,542	153,234	-147,561	-4,131	0		-55,550	-55,473	77
Flooded rice	35,107	-1,404	-36,511	0	0	0	-36,511		1,755	-70	-1,826
Grasslands & Livestock											
Grasslands	0	0	0	0	0	0	0		0	0	0
Livestock	63,154	155,813	92,659	0	0	7,089	85,570		3,158	7,791	4,633
Forest mngt.	0	0	0	0	0	0	0		0	0	0
Inland wetlands	0	0	0	0	0	0	0		0	0	0
Coastal wetlands	0	0	0	0	0	0	0	0	0	0	0
Inputs & Invest.	281,922	330,146	48,224	0	0	28,261	0	19,962	14,096	16,507	2,411
Total emissions, tCO₂-e	-572,018	-593,061	-21,044	153,234	-272,173	28,873	49,059	19,962	-28,601	-29,653	-1,052
Total emissions, tCO₂-e/ha	-57.7	-59.9	-2.1	15.5	-27.5	2.9	5.0	2.0			
Total emissions, tCO₂-e/ha/yr	-2.9	-3.0	-0.1	0.8	-1.4	0.1	0.2	0.1			

* = Source / = Sink

6. The monetary value of the GHG reduction benefits has been estimated and considered as economic benefits of the project in the EFA. The recent draft Guidance Note on Shadow Price of Carbon (SPC) in Economic Analysis (September 2017) recommends using for the analysis low and high estimates of the carbon price starting at US\$41 and US\$82, respectively, in 2021, and increasing at an annual rate of 2.25 percent. As the carbon sequestration benefits estimated on the basis of above assumptions are rather marginal, the EIRRs calculated for the three scenarios—(a) excluding GHG reduction benefits,

⁶² NB the analysis of coconut (23tCO₂e per year) was done separately and added to the final value due to space limitation in EX-ACT.



(b) low shadow price of carbon scenario, and (c) high shadow price of carbon scenario—are almost the same if rounded to one decimal (15.7 percent for the without-carbon-reduction-benefits scenario and the low shadow price of carbon scenario, and 15.8 percent for the high shadow price of carbon scenario).

7. **Substantiality.** It should be noted that the project's carbon emission reduction potential is much larger than what has been estimated based on the above assumptions. There are many investments related to the reduction of FLW which are not accounted for due to the limitations of the FAO EX-ACT tool. The EX-ACT version used does not provide a detailed analysis of post-farm gate GHGs emitted or avoided along the agro-value chain through investments in (a) post-harvest handling and storage, (b) processing, and (c) distribution. While a new tool 'EX-ACT for value chains' is available for assessing environmental and socioeconomic potential of agri-food value chains, it has not been used due to limited data availability for making meaningful assumptions. Consequently, the effects of the investments on FLW (see joint Multilateral Development Banks (MDB) Methodology, Table 5, eligibility criteria 9) will be accounted for using the qualitative approach (Interim Guidance Note on Demonstrating Substantiality). The value chain activities that have implications for GHG and their link to emissions are summarized in table 5.4.

8. **General.** Generally, one-third of produced food does not reach the consumer. Globally, FLW generates annually 4.4 GtCO₂eq, or about 8 percent of total anthropogenic GHG emissions,⁶³ almost equivalent to global transport emissions together. Cereals (33 percent) and vegetables and meat (20 percent despite low losses) have the highest carbon footprint, respectively.⁶⁴ Post-harvest handling and storage is where most losses occur away from production and has the highest loss footprint outside consumption.

9. **Indonesia.** Indonesia is one of the largest food waste-producing countries globally, with 300 kg per capita per year. Inefficient processing alone leads to vegetable loss of 63 percent. Food waste contributes 7.3 percent of GHG emissions every year.⁶⁵ The country has several plans to address FLW. For instance, the West Java Strategic Plan 2018–2023 notes that by using modern technologies, post-harvest waste can be reduced from 10 percent to 3 percent.⁶⁶ This project aims to address this FLW challenge through investments in critical public goods and rural infrastructure that would otherwise not be developed and promotion of value-enhancing and market-relevant technological innovations as summarized in table 5.4.

⁶³ Call to Global Action on Food Loss and Waste.

⁶⁴ Food Wastage Footprint and Climate Change.

⁶⁵ Policy Reform to Reduce Food Loss and Waste and Support Low Carbon Development in West Java, Indonesia.

⁶⁶ West Java Office for Food and Horticultural Crops. 2019. *West Java Strategic Plan 2018–2023*.



Table 5.4. Detailed Description of Value Chain Investments for Demonstrating Qualitative Substantiality

Value Chain Stage	Activity	Component	Linking to GHG Emissions
Production	The project will support development of farmer corporations (KPs) and provide infrastructure and facilities (through KP matching grants) that would support the efficiency of the food production process that also contributes to the reduction of FLW. These include soil testing, disease identification, and product quality assurance services and equipment.	Component A (large-scale demonstration and KP matching grant to KP)	On-farm investments for improved production, disease identification, and quality assurance reduces the amount of produce that will spoil, thereby reducing the amount of food loss at the primary production level.
Storage	Development of storage facilities	Component A: KP matching grants to KP will support development of storage infrastructure, pack houses, cold chain, and so on.	These investments will replace traditional storage facilities, which farmers typically use, and will contribute to reduced food loss post-production.
Processing	Through improving public services for value chain development, the project will support improvement of calibration, testing, and quality control of processing tools and machineries, which will reduce FLW through improved processing efficiency. Specifically, the project will support the development and dissemination of reduction and/or management of agricultural contamination and waste, such as innovative solar dryers.	Component A: Improved public service delivery	The existing processing infrastructure and inefficiencies inherent in them contributed to significant food loss at processing stage. By improving the efficiency of processing infrastructure through introducing new technologies, which farmers have not used before, the project will contribute to reduced food loss.
Distribution	The project will develop value chain platforms, which involves intermediaries, off-takers, and actors in partnership to shorten supply chains, provide price transparency, and handle FLW. Digital technology will be at the core of improving efficiency along the food value chain from aggregation, logistics, and marketing, thereby, enhancing access to markets.	Components A and B	By supporting digital technology platforms, the project will enable farmers and value chain actors to increase access to markets by ensuring that produce is delivered to the markets faster, thereby reducing the amount of food which is lost due to delays in accessing markets.



ANNEX 6: Climate Change Co-Benefits

COUNTRY: Indonesia **Agriculture Value Chain Development Project (ICARE)**

Climate Vulnerability Context

1. Indonesia is one of the most disaster-prone countries in the world. In 2021, the Global Risk Index ranked Indonesia 59 out of 191, classifying it as a medium-risk country.⁶⁷ On average 1,900 disasters occur annually in Indonesia, with more than 19,618 natural disasters in the past decade.⁶⁸ Although Indonesia is known for its volcanoes, earthquakes, and tsunami, hydro-meteorological weather events are responsible for 95 percent of these disasters, with floods, landslides and strong winds occurring most frequently. Floods, the most common disaster, account for the largest proportion of victims and damages in the country every year. Given its archipelagic nature, the country is also susceptible to sea level rise.
2. The agricultural sector of Indonesia is highly vulnerable to extreme weather and natural disasters. Though many environmental hazards occur independent of climate change, others are made worse and occur more frequently under a changing climate. Heavier concentrations of rain are likely to exacerbate the impacts of flooding and landslides, while less frequent rains and a delayed monsoon season will worsen drought and forest fires. In 2015, widespread drought affected about 570,000 ha of rice fields and 3 million people, mainly farmers, of which 1.2 million depended heavily on rain-fed production. Increased temperatures will help spread pests and diseases that harm humans, crops, and livestock. Natural disasters erode the long-term livelihood resilience and adaptive capacity of communities reliant on agricultural value chains, leaving them more vulnerable to climate and non-climate related shocks while constraining national socioeconomic development.
3. In the coming decades, slow-onset climate shifts will decrease the crop suitability of several production systems which are core to poverty reduction and food security goals of the GoI. Agricultural producers are also vulnerable to increasingly severe abiotic stresses such as rising temperatures, shifting rainfall patterns, drought, and flooding. Pest and disease outbreaks, often induced by higher temperatures, are also getting worse. Programs to increase the climate resilience of small-scale producers and value chain actors are critical to growing income and guaranteeing Indonesian food security.
4. Indonesia's wide and varied topography hosts five distinct agroecological zones: dry land and dry climate, dry land and wet climate, highland, lowland irrigation, and tidal swamp. Sumatra, Java, Bali, Kalimantan, Sulawesi, and Papua are all characterized by high elevations and forest cover, while Kalimantan is home to the largest area of peatlands, and Papua has the largest concentration of both tropical forest and mineral deposits. This diverse geography enables a wide variety of agricultural production systems. Yet, each of this diverse geography has slightly different exposure of climate change. Consequently, because proposed project locations cover a broad range of geography, individual locations

⁶⁷ According to INFORM Global Risk Index. INFORM is a collaboration of the United Nations Inter-Agency Standing Committee and the European Commission that supports a global open-source risk assessment for humanitarian crises and disasters. <https://drmkc.jrc.ec.europa.eu/inform-index>.

⁶⁸ Data and Information Disaster in Indonesia (DiBi), National Agency for Disaster Management.



may be exposed to different combinations of hazards and at varying levels of intensity. Java, Nusa Tenggara, the southern part of Sumatra, and South Sulawesi, among others, have been identified as areas vulnerable to hydro-meteorological disasters resulting from the weather abnormality. In 2021, all nine project districts reported occurrences of flooding with several also reporting landslides and flash floods due to high rain intensity although not in the specific project location. Although Indonesia is particularly exposed to sea level rise given its archipelagic nature and five of the nine project districts include coastal areas, the specific project locations are situated more inland.

Indonesia Agricultural Sector Contribution to GHG Emissions

5. Indonesia is not only a victim of climate change, but it is also a major direct contributor. Indonesia is the fifth largest contributor of GHG emissions globally. AFOLU accounts for 48 percent of total national emission, and agriculture is one of the biggest drivers of land use change. Paddy (rice) cultivation (accounts for approximately 5 percent) and livestock sector (accounts for approximately 3 percent) of total national emissions. FLW accounts for another 7.3 percent of national emissions. The transition to a low-carbon agricultural pathway, while contributing to improving farmers and consumers' welfare and building resilience of the food system, is a much-needed priority agenda for the GoI.

Project relevance to addressing climate vulnerabilities and reducing carbon footprints in agriculture

6. The GoI has requested World Bank financing support for ICARE (value chain development project) to demonstrate how a value chain approach could help address climate-related vulnerabilities mentioned above while enhancing resilience to climate shocks and reducing the carbon footprints in the agricultural sector. The project takes a market-driven value chain approach relying on (a) KP model, (b) strengthening private sector role, and (c) strengthening public sector facilitation role to deliver on climate change adaptation and mitigation outcomes.

7. To accommodate diversity of agro-ecological zones and commodities, the GoI has selected 14 agri-zone clusters across nine districts, which cover a total of 15 commodities, to reflect the diversity of landscapes. Given the project's broad geography, the project will assess site-specific climate and disaster risks during the planning phase and incorporate appropriate risk mitigation and resilience-building measures into the agri-zone cluster agribusiness development plans. Capacity-building activities, climate-smart agricultural practices, and value chain investments will consider local hazards and climate vulnerabilities (for example, introduction of improved water management and drought-tolerant varieties in drought-prone regions). The project will also facilitate access of farmers in KPs and value chain actors to financial products, including credit to enable the adoption of climate-smart technologies and insurance to mitigate impact of harvest damage due to climate and geophysical hazards. The value chain development model demonstrated by ICARE, if proven successful, will have the potential to scale up across a broader geography in Indonesia. Though it is a value chain development project, achieving climate change adaptation and mitigation, through all the project components and subcomponents, is at the core of the project. Table 6.1 provides a detailed explanation and causal link of various subcomponents of the project with climate change adaptation and mitigation.



Table 6.1. Climate Co-Benefits: Project Activities to Support Climate Adaptation and/or Mitigation

Subcomponent	IBRD Financing Allocation (US\$, millions)	Climate Change Adaptation	Climate Change Mitigation
Subcomponent A.1: Development of <i>Kawasan Pertanian</i> models and value chains (US\$9.91 million)			
A1.a: Validation of project locations and beneficiaries	0.53		
A.1.b: Participatory district-level assessments of existing value chains	0.36	Consider site-specific climate and disaster vulnerabilities while assessing value chain of priority commodities. Results of the assessment will include recommendations with regard to the appropriate interventions (that is, climate-smart agricultural practices, crop varieties, infrastructure, trainings, and climate advisory services) needed to address identified site-specific climate vulnerabilities and enhance resilience. During prioritization of suggested intervention, resilience-building measures will be prioritized.	Consider the carbon footprint of priority commodities during the value chain assessment for assessing value chain of priority commodities. During prioritizing of suggested intervention, emission reduction measures will be prioritized.
A.1.c: Development of agri-zone cluster agribusiness development plans	0.90	Resilience-building measures, to help support smallholder farmers adapt to changing climate, will be prioritized in the agribusiness development plan. Public and private resources will be aligned to finance interventions to address site-specific climate vulnerabilities identified under A.1.b.	The plans will have an explicit focus on low-carbon development and prioritize public investments in green supply chains.
A.1.d: Development of public-private stakeholder platforms	1.13	These stakeholder platforms will leverage public sector resources to help improve resilience. This could include local-level flood management, resilient road/bridges, green energy supply, and so on.	These stakeholder platforms will also discuss greening of supply chains and clean energy solutions.
A.1.e: Improving public services for value chain support	6.00	Public support services such as soil fertility and plant and livestock disease diagnostics services will help improve resilience of smallholder farmers against changing climate.	Facilitating calibration of tools/machines will contribute to emission reduction by (a) reducing food loss and (b) reduced energy consumption. Support for soil fertility diagnostics through laboratories will contribute to precise



Subcomponent	IBRD Financing Allocation (US\$, millions)	Climate Change Adaptation	Climate Change Mitigation
			application of fertilizers, thereby reducing emission.
A.2: Supporting the development of <i>Korporasi Petani</i> (US\$46.38 Million).			
A.2.a: Supporting and facilitating the formation of farmer groups into <i>Korporasi Petani</i>	1.00	Collective action by farmers, to help build social capital, is one important pathway to improve resilience of smallholder farmers.	
A.2.b: Strengthening technical, business, financial, and organizational skills of farmers in groups and <i>Korporasi Petani</i>	7.01	The technical skills of farmers will include good climate-smart agricultural practices to improve resilience. Training will also be provided in organizational and business management to help KP members mitigate risks related to shifting weather patterns, extreme weather events, and increased climate variability, for example, through coordinating and scheduling the production of KP members and engaging in contractual arrangements with off-takers. Trainings in financial management will also be provided, to enhance KP members' literacy to financial products, including credit to enable the adoption of climate-smart technologies and insurance to mitigate impacts of harvest damage due to climate and geophysical hazards.	The business skill will aim at increasing the overall efficiency of operations to help minimize food loss in the operations of KP and ensure energy efficiency to reduce expenditures.
A.2.c: Development of viable <i>Korporasi Petani</i> business plans	2.00	These will be climate-smart business plans, which will focus on investments which could help build resilience of smallholder farmers to climate vulnerability. These investments would focus on farm-level intervention, post-harvest intervention, and supply chain integration intervention.	Due attention to carbon footprint of farmer groups/KP will be given and business plans will be screened for their emission potential.
A.2.d: Provision of KP matching grants to finance initial business needs of <i>Korporasi Petani</i>	36.37	It will finance climate-smart investments such as irrigation, storage sheds, equipment sheds, processing sheds, equipment, mechanization, storage, input support, and so on, to help resilience	These investments are geared to reduce food loss-related emissions. In addition, investments that require energy will deploy solar energy/renewable options.



Subcomponent	IBRD Financing Allocation (US\$, millions)	Climate Change Adaptation	Climate Change Mitigation
		of smallholder farmers against changing climate.	
B.1: Collaborative dissemination of priority technologies through partnerships (US\$39.71 million)			
B.1.b: Competitive technology grants	30.00	The competitive technology grant is aimed at greater dissemination of climate-smart technology in agricultural supply chain. Latest innovation (in terms of resilient seeds, new mechanization services, plant protection technology, storage technologies, and post-harvest management technologies) will be supported through this grant which will help support resilience to changing climate.	Energy efficiency (by deploying solar/renewable energy) will be promoted. In addition, these technologies will support reduction in food loss-related emissions.
B.1.c: Supporting the transfer and adoption of existing and market-relevant technologies	5.23	Large-scale demonstration of climate-smart agricultural technologies (on-farmers plots and public facilities) and climate field schools will be conducted to disseminate and support large-scale adoption of climate-smart technologies and practices by farmers. This includes the dissemination of improved (drought/flood tolerant and/or pest-resistant) varieties, as well as practices to adjust planting to changing weather patterns, among others.	Large-scale demonstration of climate-smart agricultural technologies (on-farmers plots and public facilities) will be conducted to disseminate the technologies and support large-scale adoption by farmers for climate change mitigation.
B.1.d: Mainstreaming the use of digital technologies to address value chain bottlenecks in agriculture.	4.00	Agro-meteorological advisory services, pest and diseases identification and management support, early-warning systems, and support for greater adoption of climate-smart agricultural practices will be facilitated through digital agricultural technology platforms. Given Indonesia's vulnerability to climatic hazards, access to reliable agro-meteorological advisory services and climate early-warning systems would be crucial to help farmers better plan their production. Access to pest and disease identification services would help	These digital services will improve overall efficiency of the supply chain and contribute to reduced food loss.



Subcomponent	IBRD Financing Allocation (US\$, millions)	Climate Change Adaptation	Climate Change Mitigation
		farmers take faster and appropriate actions to mitigate crop damage.	
B.2: Institutional capacity building (US\$5.00 million)			
B.2.a: Strengthening the capacity of value chain actors (small- and medium-scale agribusiness enterprises, including specialized technical service providers, input dealers, product aggregators, processors, traders, and commercial financial institutions)	3.00	Capacity building will also focus on building resilient supply chains to help mitigate the effect of climate change related disruptions in the supply chain. It will help support farmers and value chain actors to make financial investments in climate-smart agriculture technology and practices, as well as manage their climate risks through financial products such crop insurance.	It will help support value chain actors to make investments in emission-reducing practices, clean energy solutions, and post-harvest infrastructure to reduce food loss.
B.2.b: Training for public sector personnel	2.00	Government staff will be trained in climate-smart agriculture and help disseminate technologies and practices that can improve resilience of agricultural sector.	Government staff will be trained in climate-smart agriculture and help disseminate technologies and practices that can improve carbon footprint of agricultural sector.

8. In many clusters of the project, farmers practice a monoculture of paddy and grow paddy for three consecutive seasons (wet [paddy], wet [paddy], and dry [paddy]). By supporting scaling up and greater adoption of maize and alternative commodities, the project will aim to replace paddy production in the dry season with other commodities. Through these efforts, it is expected that the project will replace 2,000 ha of paddy production in the dry season with other commodities and will accordingly contribute to reduced GHG emission.

9. The total FLW-associated emission in 2000–2019 (20 years) is estimated at 1,702.9 MtCO₂eq, with the average contribution per year equaling 7.29 percent of GHG emission in Indonesia. Based on the food sector and types, the biggest generation is found in crops, particularly cereals. Meanwhile, the most inefficient food sector and category is horticulture plants, especially vegetables. ICARE, by working in 15 different commodity types, will pilot innovation which will result in FLW which could be subsequently scaled-up. Most of the project interventions are strongly aligned with the recommendations of the Food Waste and Loss in Indonesia - Supporting the Implementation of Low Carbon Economy (BAPPENAS, Government of Indonesia 2021).



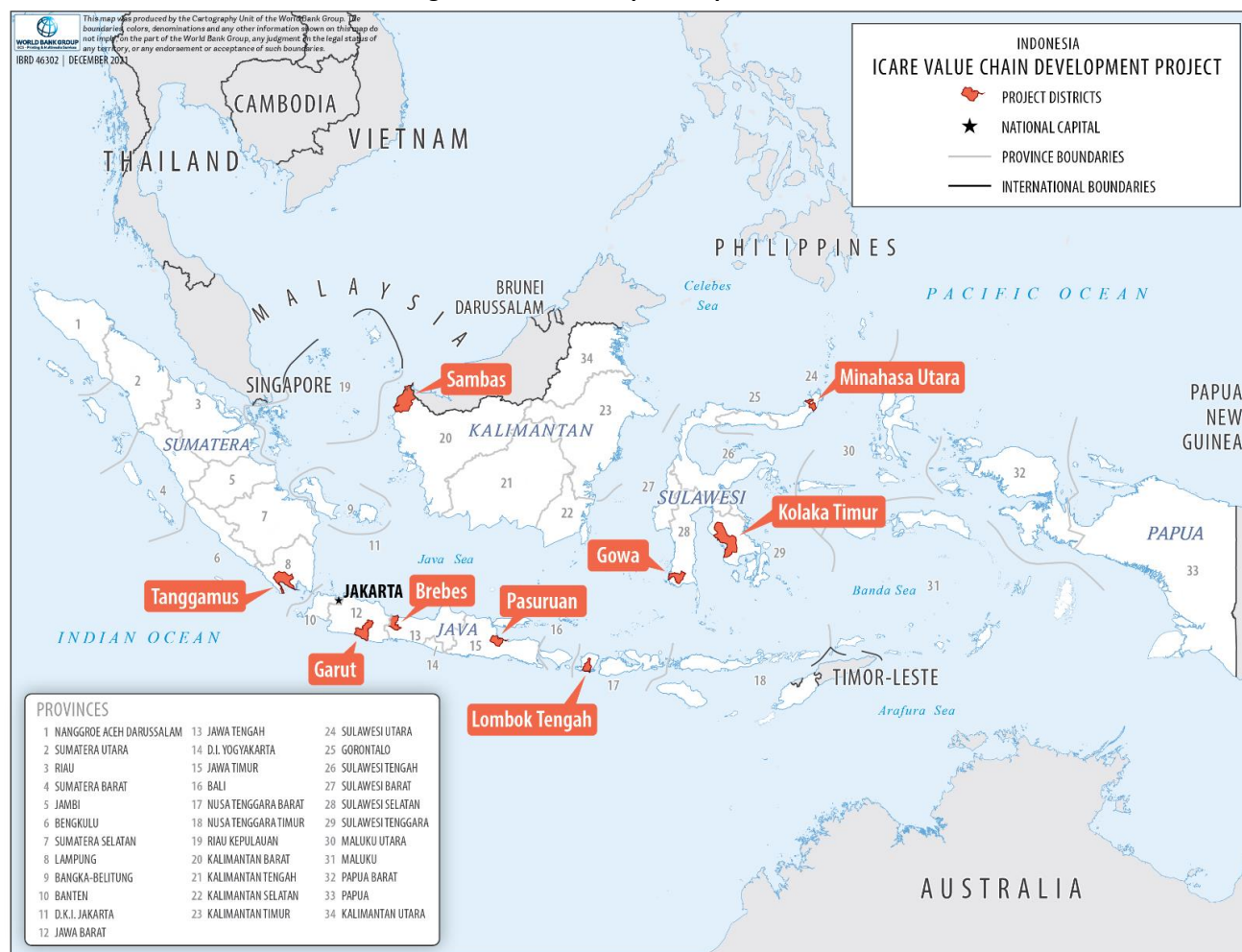
10. The following intervention pathways will contribute to reduction in FLW-associated emissions:
- (a) The project will support development of KPs and provide infrastructure and facilities (through KP matching grants) that would support the efficiency of the food production process that also contributes to the reduction of FLW.
 - (b) The project will develop value chain platforms which involve intermediaries, off-takers, and actors in partnership to shorten supply chains, provide price transparency, and handle FLW.
 - (c) By alignment of the agribusiness development plan at the district level, the project will help leverage local government financing of basic facility infrastructure to support the FLW prevention and handling such as clean water, electricity, and roads.
 - (d) Through the competitive technology grant mechanism, the project will support broader scale-up of climate-smart agricultural technologies and mechanization support to facilitate process efficiency in supply chain and reduce food loss.
 - (e) Through improving public services for value chain development, the project will support improvement of calibration, testing, and quality control of processing tools and machineries, which will reduce food loss through improved processing efficiency.
 - (f) By supporting digital technology platforms, the project will enable farmers and value chain actors to increase access to markets and enhanced price transparency, thereby minimizing the occurrence of food loss.
 - (g) By investments in post-harvest management and storage infrastructure, considerable reduction on food loss is expected.
 - (h) Through capacity-building efforts at farm and across the value chain, project beneficiaries will be trained in proper handling, storing, packaging, processing, and transportation of agricultural produce which will contribute to reduced food loss.



ANNEX 7: Project Map

COUNTRY: Indonesia Agriculture Value Chain Development Project (ICARE)

Figure 7.1. ICARE Map of Proposed Locations



Source: World Bank (2021).