

LEVERAGING DIGITAL TECHNOLOGIES AND EXPERIENCE FOR AGRICULTURAL AND RURAL DEVELOPMENT IN ASIA AND THE PASIFIC

IFAD – ADB SYMPOSIUM in conjunction with MAFRA
23 – 24 November 2022, SEOUL, REPUBLIC OF KOREA

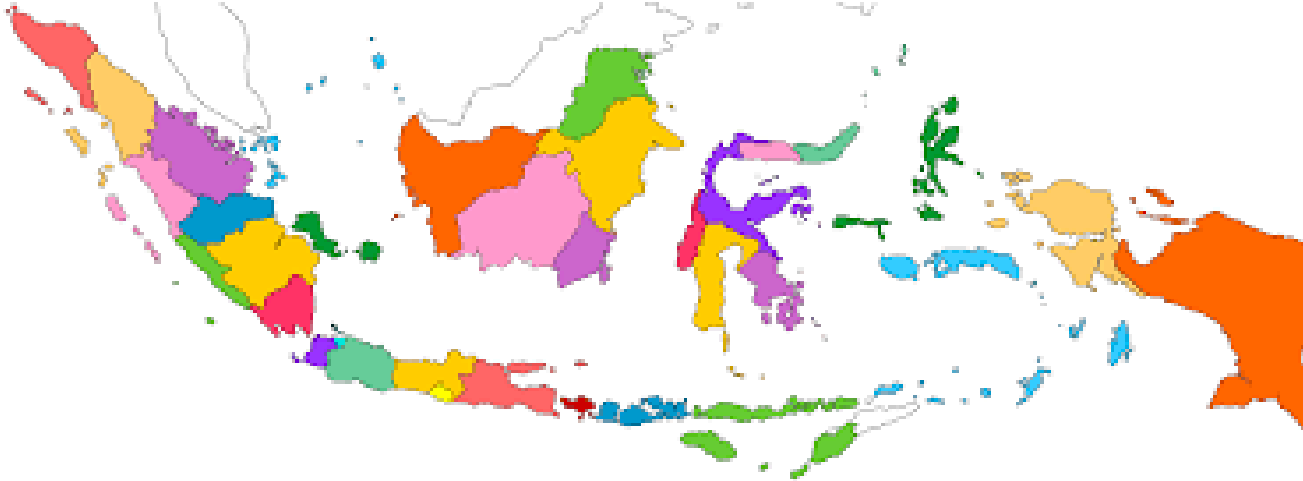
Horticulture Value Chains in Indonesia.

By : Prof. Dr. Eriyatno
Prof. Dr. Kholil

Center of System



Indonesia Overview

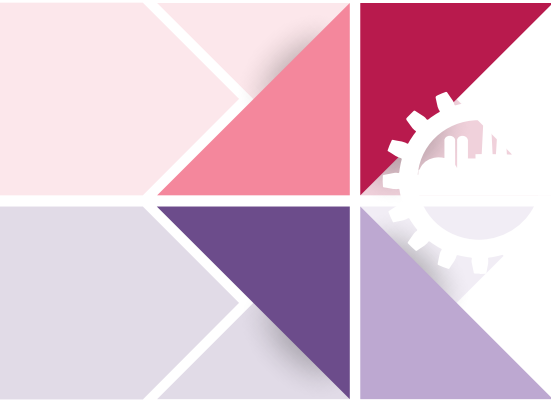


Population	: 271 million
GDP Agriculture	: 13.71%
Growth Agriculture	: 2.19% (2020)
Workforce	: 41.13 million



Background

ADB: Analysis of Fruit and Vegetable Value Chains in Indonesia
conducted by Center of System (ADB-TA 9689 2020 – 2021)



Policy Outputs

This Study recommend to **increase efficient** value chain **infrastructure** for horticulture products, by constructing Agro Logistic Center (ALC) institution at several provinces known as **Smart Agro Distribution Center (SADC)**. Advanced Post Harvest Loss (PHL) reduction technology and cold chain is established in SADC

*This policy had been exposed to Ministry of Agriculture and
The National Development Planning Agency*

Introduction

Agriculture Value Development in Selected Asian Countries

ADB Project Number 52239-0001

Rational

The value of **postharvest losses** in one year is potentially higher than the investment required to develop the modern agri market and **agri infrastructure** in the long run



Outcome

Investment in the **modernization** of **agri logistic** and **rural development** increased, where its output include improvement of knowledge on rural development, food security, and agriculture value chains in Asia and the Pacific





Policy Objective – National

Fair Trade and Price Stabilization for High Value Crops

Law Number 19/2013

Farmer Protection and Empowerment

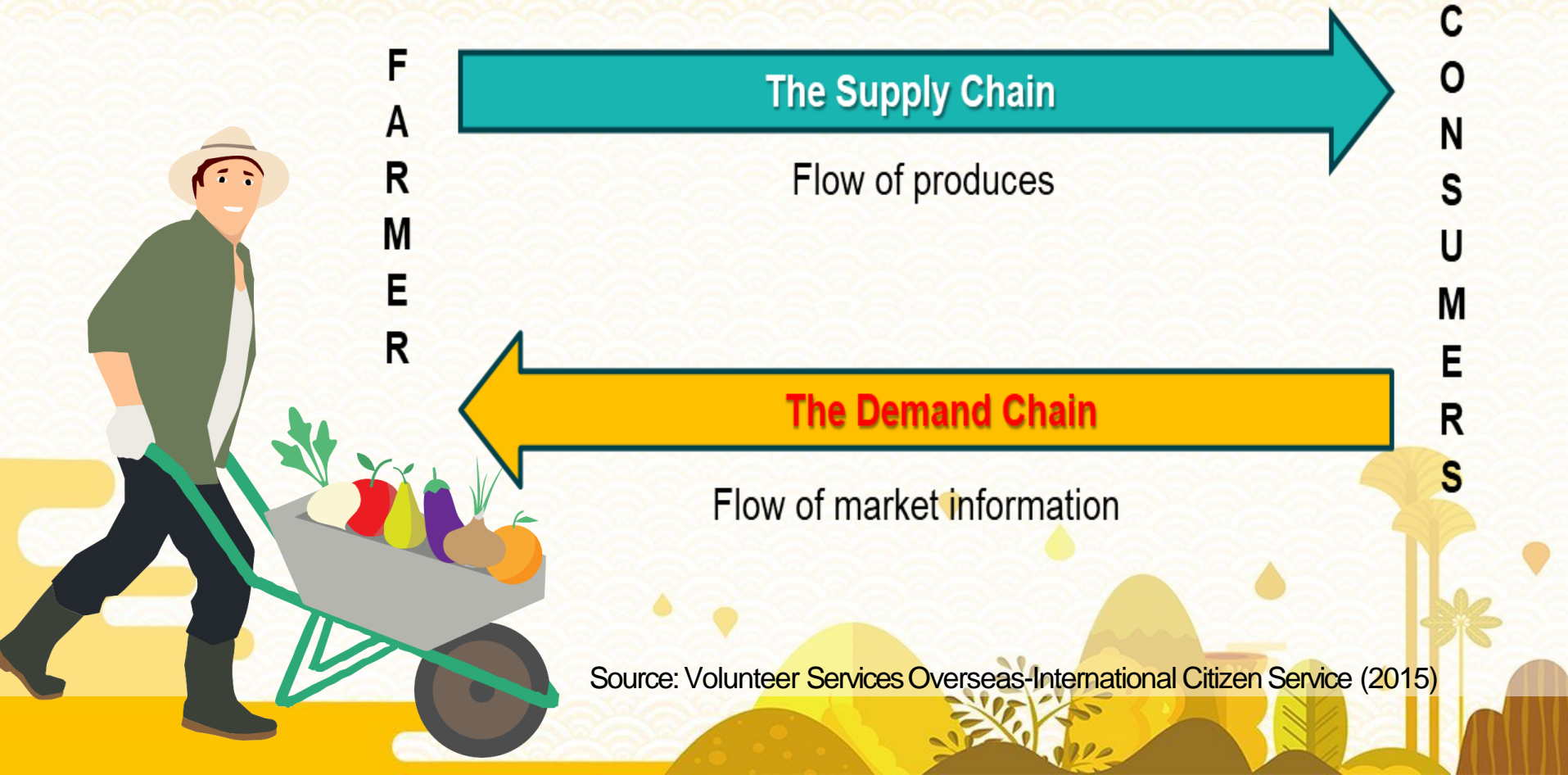
Article 25:

Government has **obligation** to develop necessary condition to manage agriculture commodities **price** which has **profitable** impact to the farmer

Sustainable and Resilient Food Security

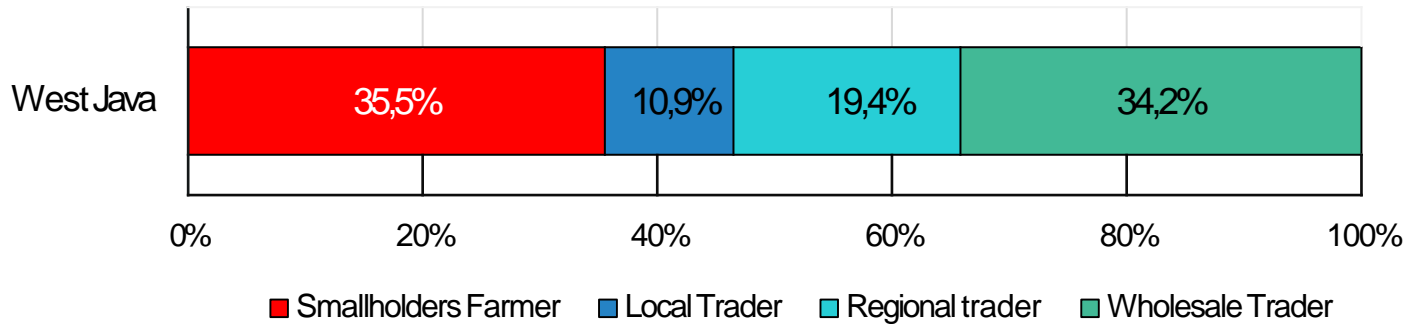
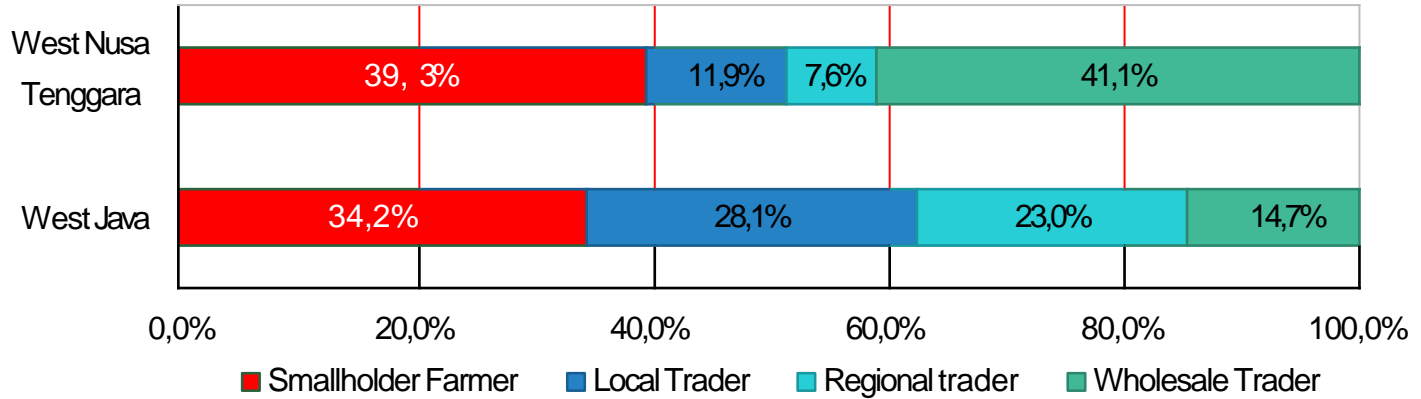
Law Number 18/2012 about Food

Policy Study: Value Chain System Approach



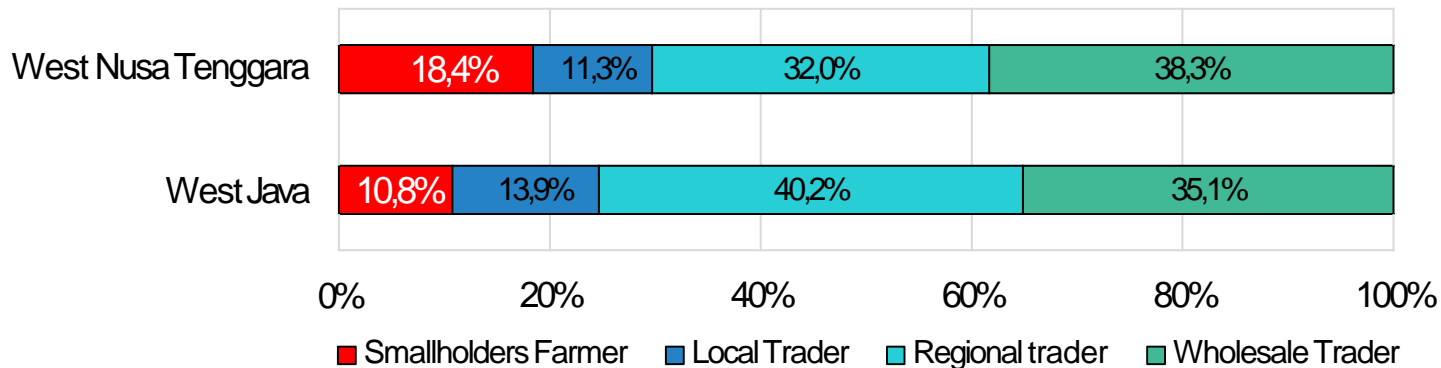
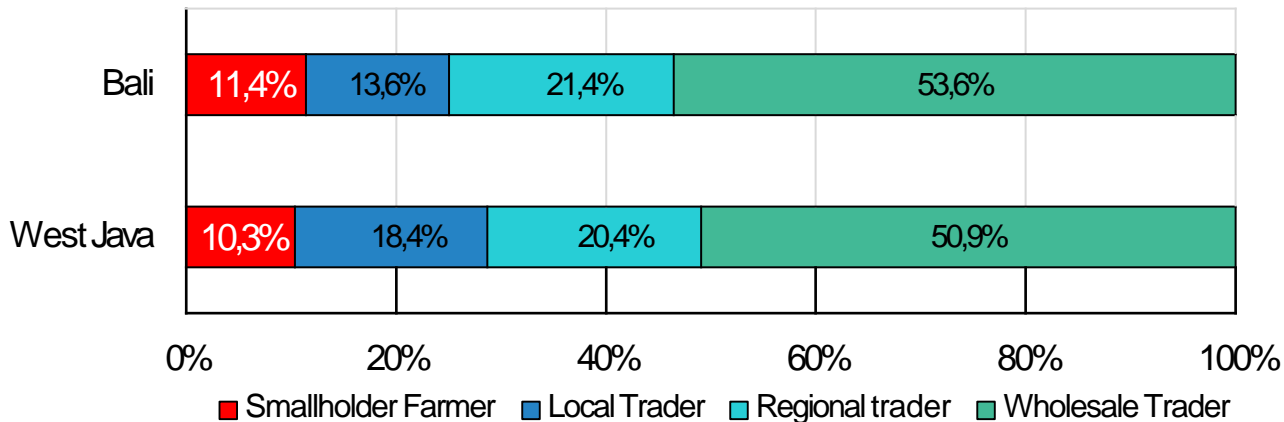
Project Finding:

Profit Share of Value Chain Channel for Vegetables

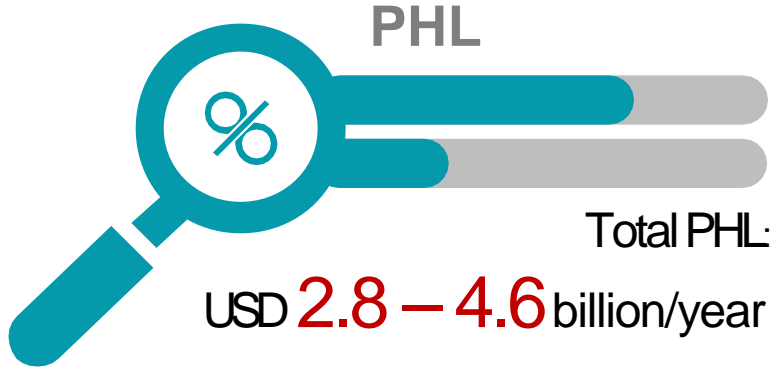


Project Finding:

Profit Share of Value Chain Channel for Fruits



Project Finding: Post-Harvest Losses (PHL)



	PHL (%Weight)	PHL Value (USD Million/Year)
• Shallot	17.0 – 30.4	383.8 – 686.3
• Chili	29.1 – 44.1	1,075. – 1,629.4
• Banana	18.5 – 32.9	962.1 – 1,711.0
• Orange	6.4 – 17.1	270.9 – 626.1

Investment Cost for 5 years:

USD 29.7 million/year



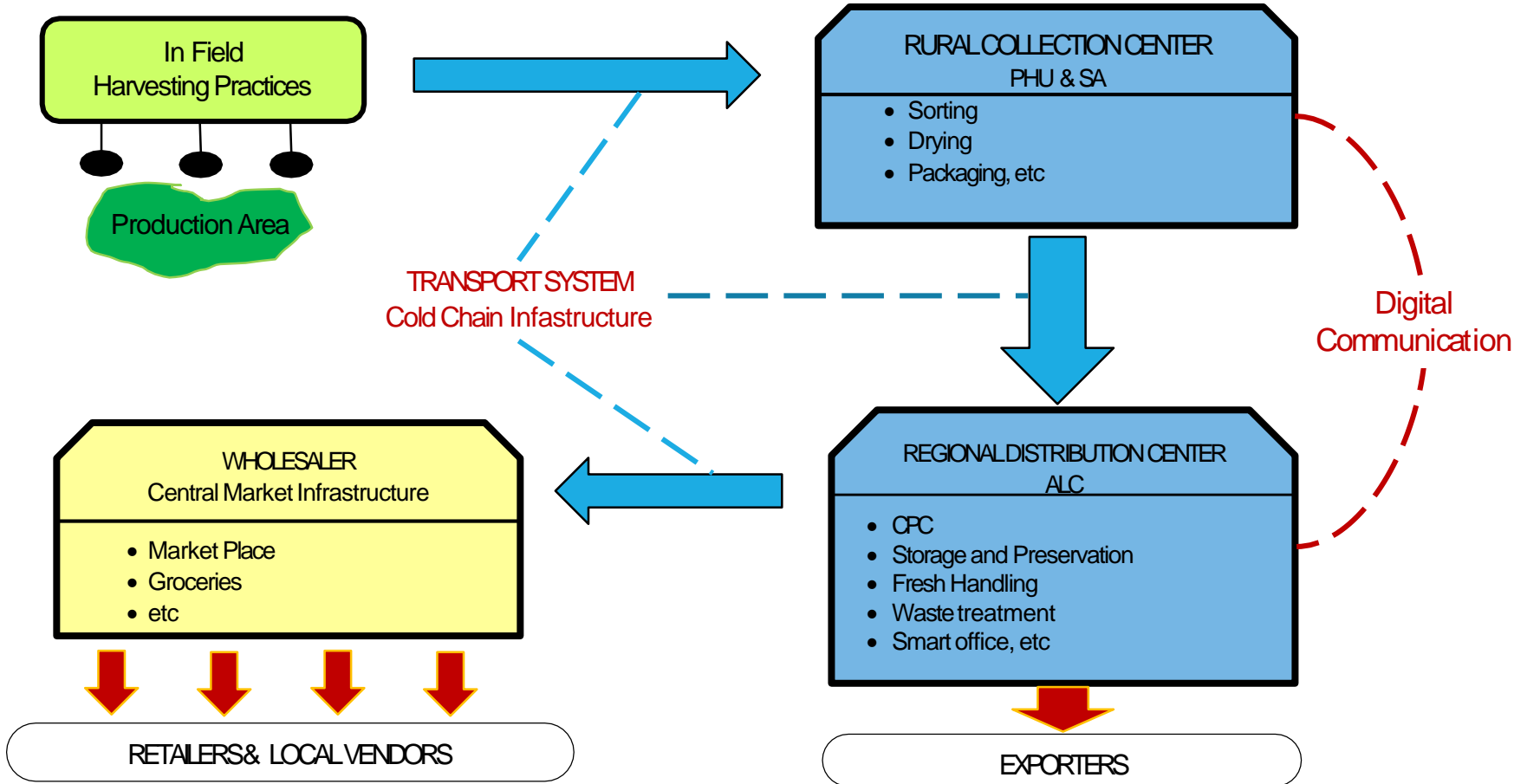
(USD Million/Year)

• Shallot	42.6
• Chili	122.3
• Banana	109.3
• Orange	38.9

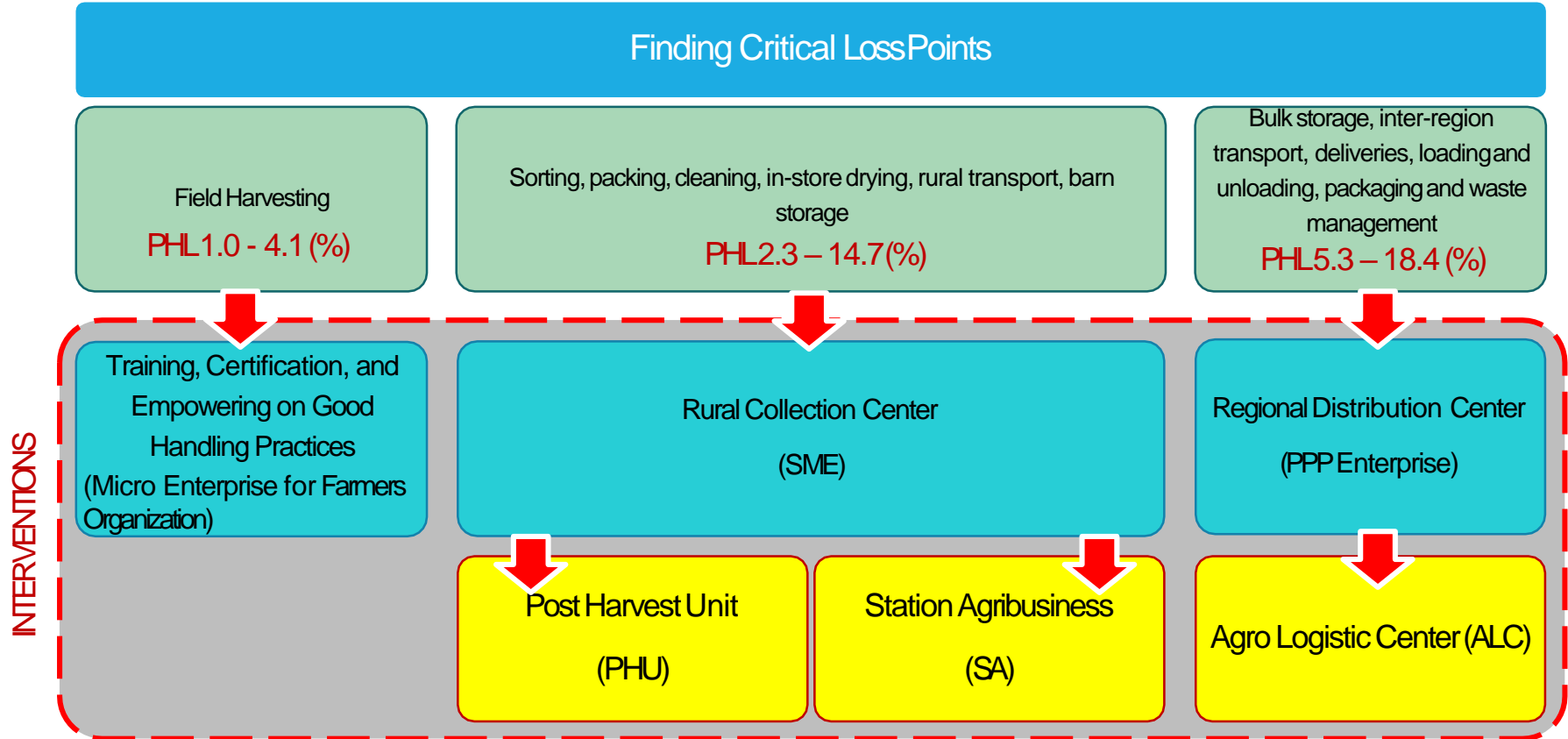
Total Reduction:

USD 336.6 million/year

Interconnectivity Design of Value Chain Infrastructure for Horticulture Products



Development Strategy for PHL-Reduction of FVCommodities





Rural Collection Center

Business Model

- RCC managed by Farmer Owned Enterprise (BUMP) or Farmers Corporate (Korporasi Petani) supported by government and applied Contract Farming with ALC
- SA handling capacity up to 5 - 10 ton of raw material FV per day with investment around IDR 5-10 billion, serving around 2,000 farmers



as SME

Location Plan

- Strategic location of RCC, includes good access for transportation, availability of water, decent land contour, large space, and free from disaster areas.
- Farmers and traders interconnectivity should be considered the location within horticulture cluster area

- RCC is expected to improve agribusiness network from **small holders** farmer to buyer.
- RCC main task is to manage farmer partnership, crop pattern, and production schedule relevant to **market demand**.

Agribusiness Network



Professional
Entity

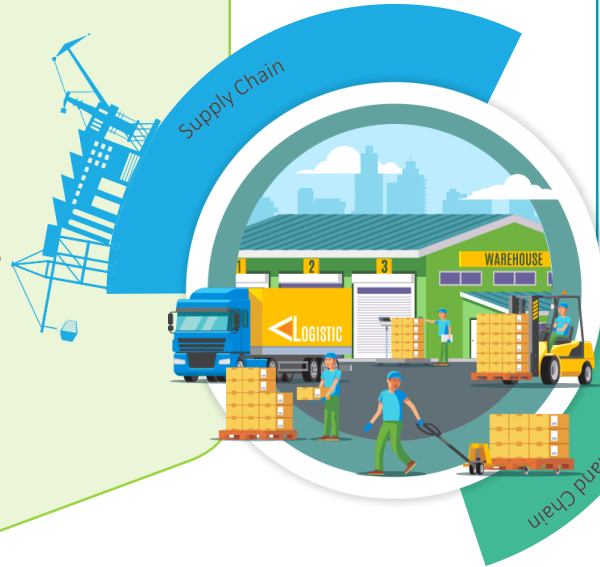
Working Capital

- Government **intervention** aim to support **innovative financing scheme** from various source of funds, which will be utilized for farmers expenditures and working capital of RCC



Business Process

- ALC capacity **300-500 ton FV** per day
- with investment is **IDR 350-500 billion**, serving around **150,000 farmers**



Business Model

- In the long term ALC business models is **Public- Private Partnership (PPP)**.
- Strong regional policy and **reliable regulation** is important for ALC growth.
- Management team must be professional, honest, can be trusted by financial institution, and has **wide private network**



ALC Strategic Factors



Institution

Work Contract:

- ALC must have business contract with farmers and buyers, in provision and product delivery.
- Contract covers commodity type, quality, price, amount, time, and payment scheme.



Technology

Modern and Digitalization of ALC:



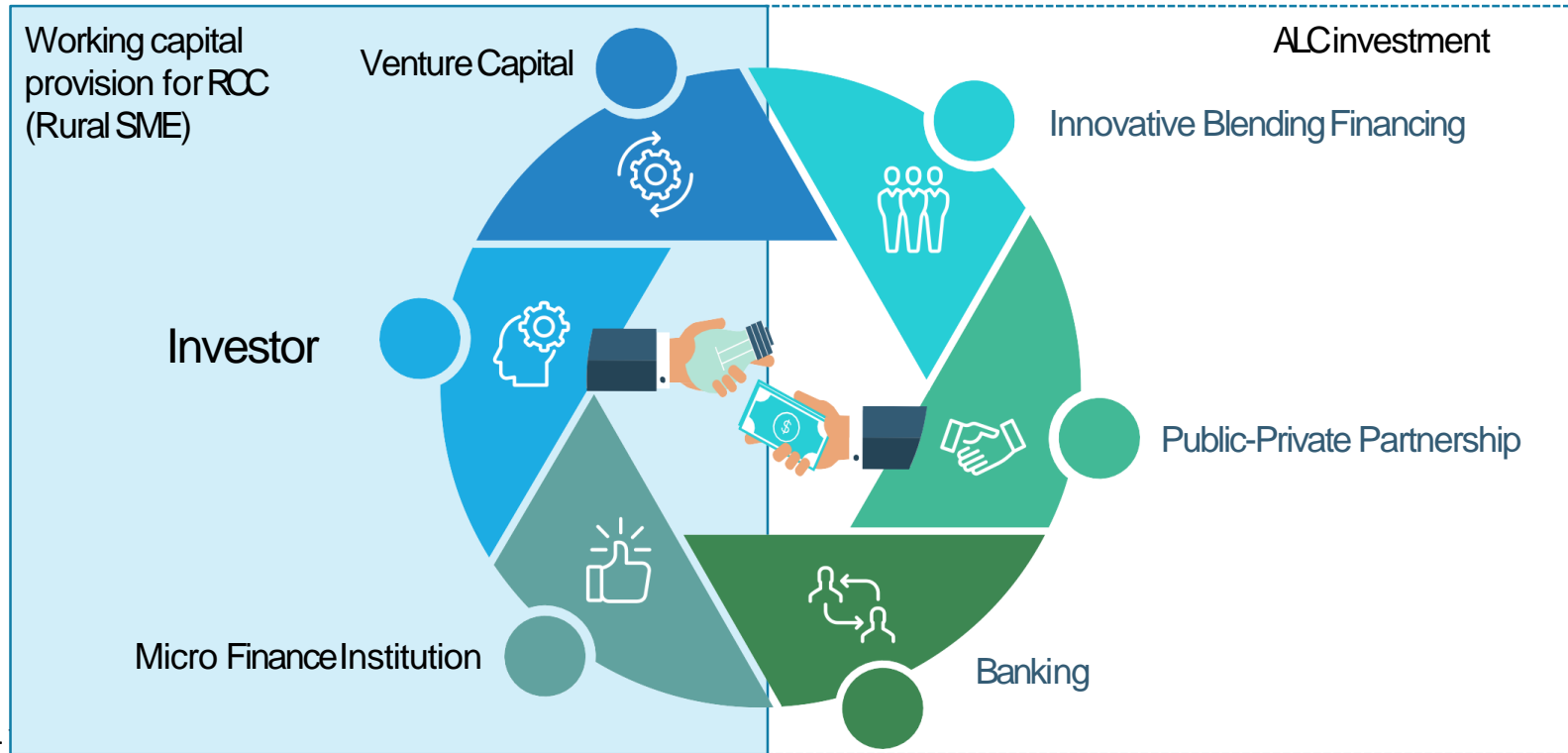
- Postharvest handling facilities;
- Storage room and CAS;
- Loading and unloading facilities;
- Processing unit for over stock & off-grade
- Smart office with digital equipment.

Financing Facilities

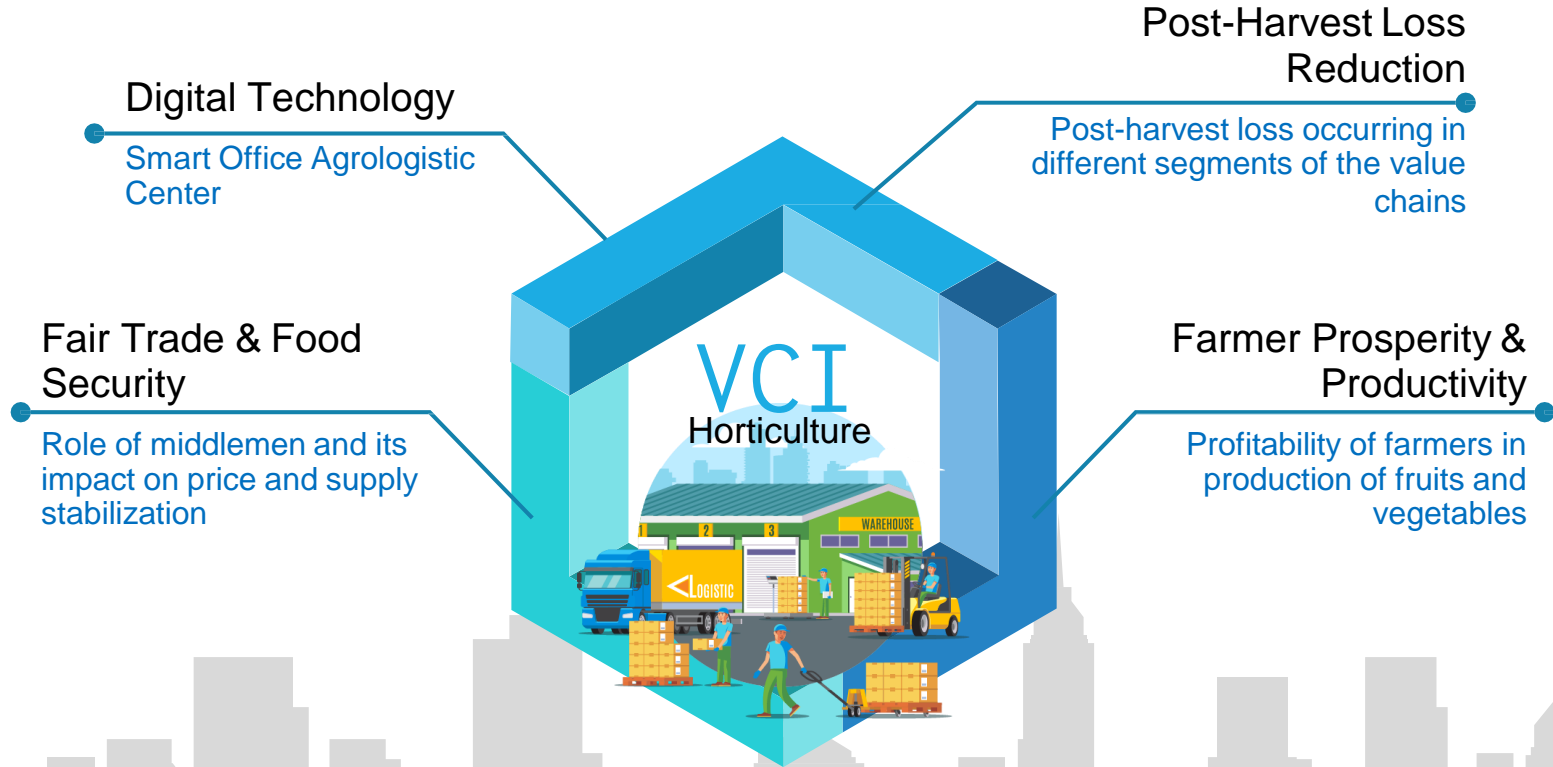
for Value Chain Infrastructure and Inclusive Business

Integration Rural Development and Food Security

Liquidity support and credit scheme creation for
"Korporasi Petani (Farmers Corporate)"



POLICY IMPACTS



Follow up

Horticultural Development in Dryland Areas Project (HDDAP),

the MoA has program on Transformation of food system and Agriculture Value Added.

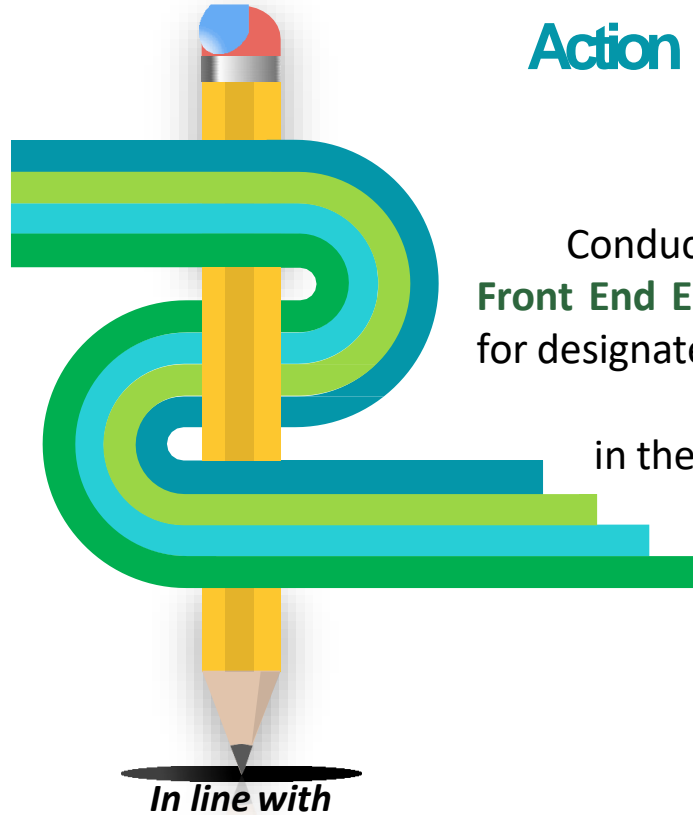
In Bappenas Blue Book for the year 2020-2025, the HDDAP aims to improve institutional capital, market cooperation, and ensuring the **demand driven supply chain** of horticulture

Action Plan

Conducting **Feasibility Study and Front End Engineering Design (FEED)** for designated Rural Collection Center and Agro Logistic Center in the **post Covid-19 transition**.

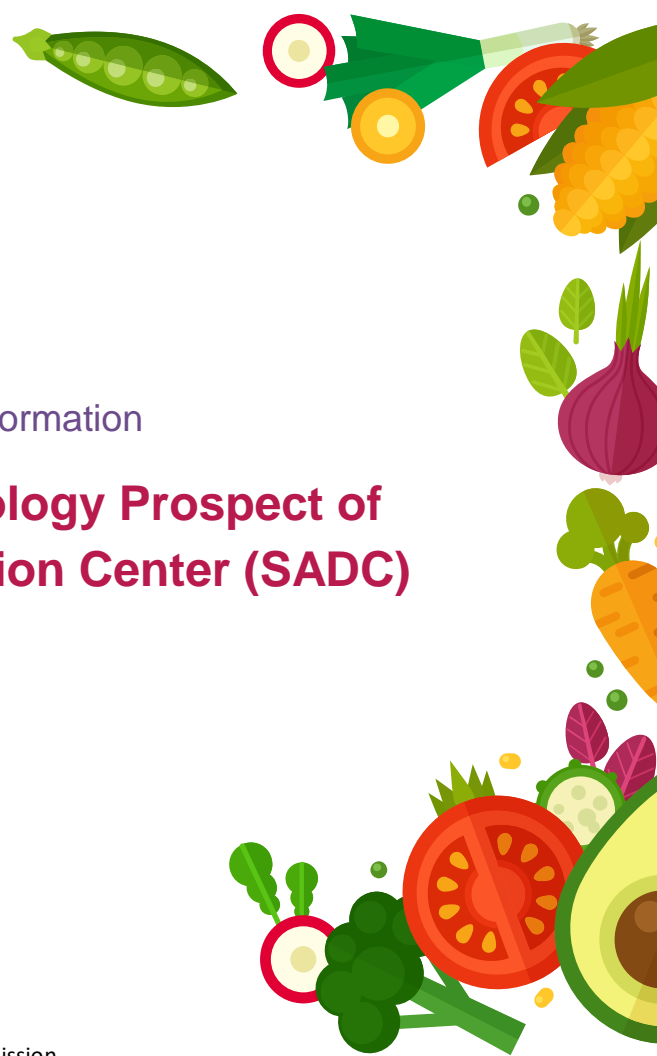


Bogor SADC Project





CENTER OF SYSTEM



Supplement Information

Investment & Technology Prospect of Smart Agro Distribution Center (SADC) in Bogor Indonesia

By : Prof. Dr. Eriyatno
Arfian Muslim

Center of System
Seoul, 23 November 2022

SADC Business Model-Canvas

AT BOGOR DISTRICT WEST JAVA PROVINCE



Key Partner

Investor; Exporter
Farmer Enterprise/RCC
Transport Enterprise; Platform Provider
BDS Provider; Banking



Key Resources

Investment & Working Capital
Cluster Productions; Professional
Management; Big Data & Digital Information;
Advanced Postharvest Technology

1

3

2

4



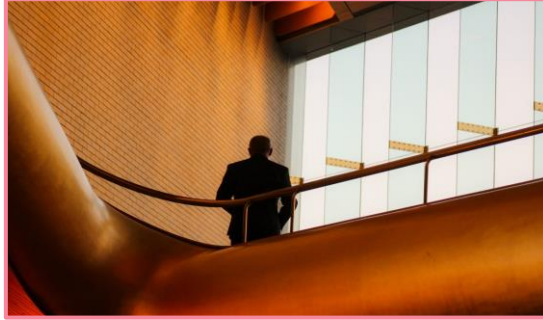
Key Activities

PO to farmer & product receiving
Order taking & fulfillment to buyer
Delivery; QC & Product Customized
Processing; Warehousing



Value Propositions

One stop service of products
Fair trade enterprise
Best product of high value crops
Lean logistic
Demand driven stock
Smart warehousing services



05

Customer Segments

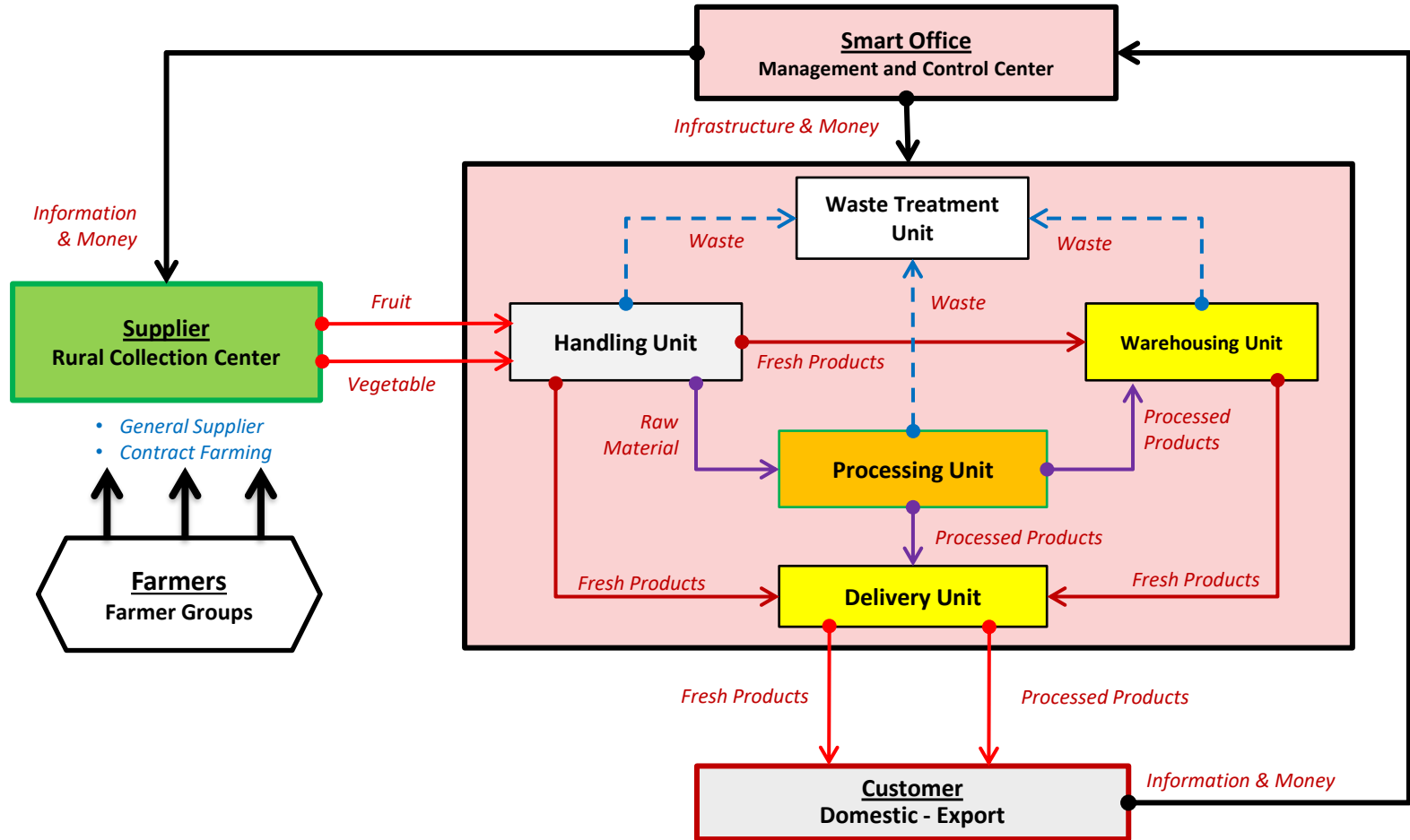
- Central Market Trader
- Traditional Retailer
- Modern Retailer
- Hotel, Restaurant, Catering
- Importer

06

Revenue Stream

- Rent facilities & utilities
- Handling & delivery service
- Loading & unloading service
- Added value product sales

Process Business of SADC



SADC Infrastructure Plan

Supported by Modern Hard & Soft Infrastructure

01

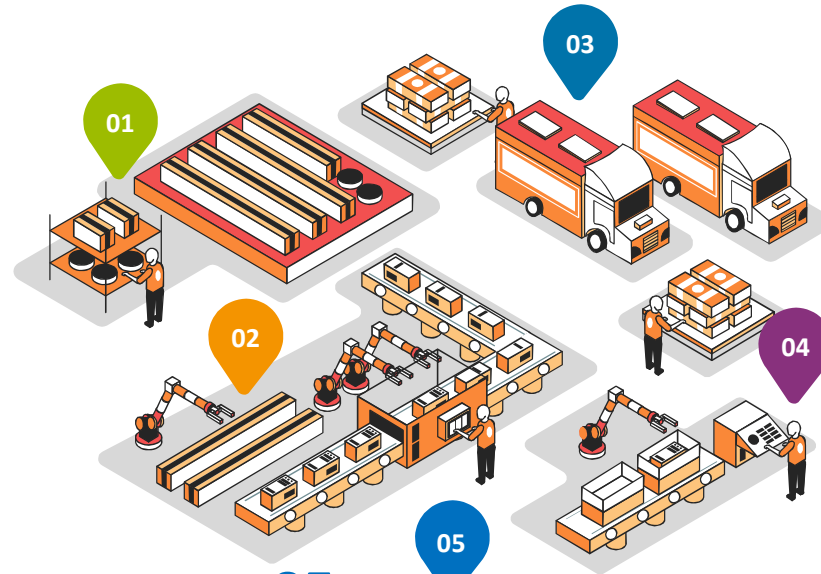
Smart Office

- Building
- Platform & Equipment
IT
- System Development

02

Postharvest Handling

- Process line: Sortation, Quality Control, Treatment, Packaging



03

Warehouse

- Racking system
Handling Equipment
(forklift, pallet) including
trades

04

Agroindustry

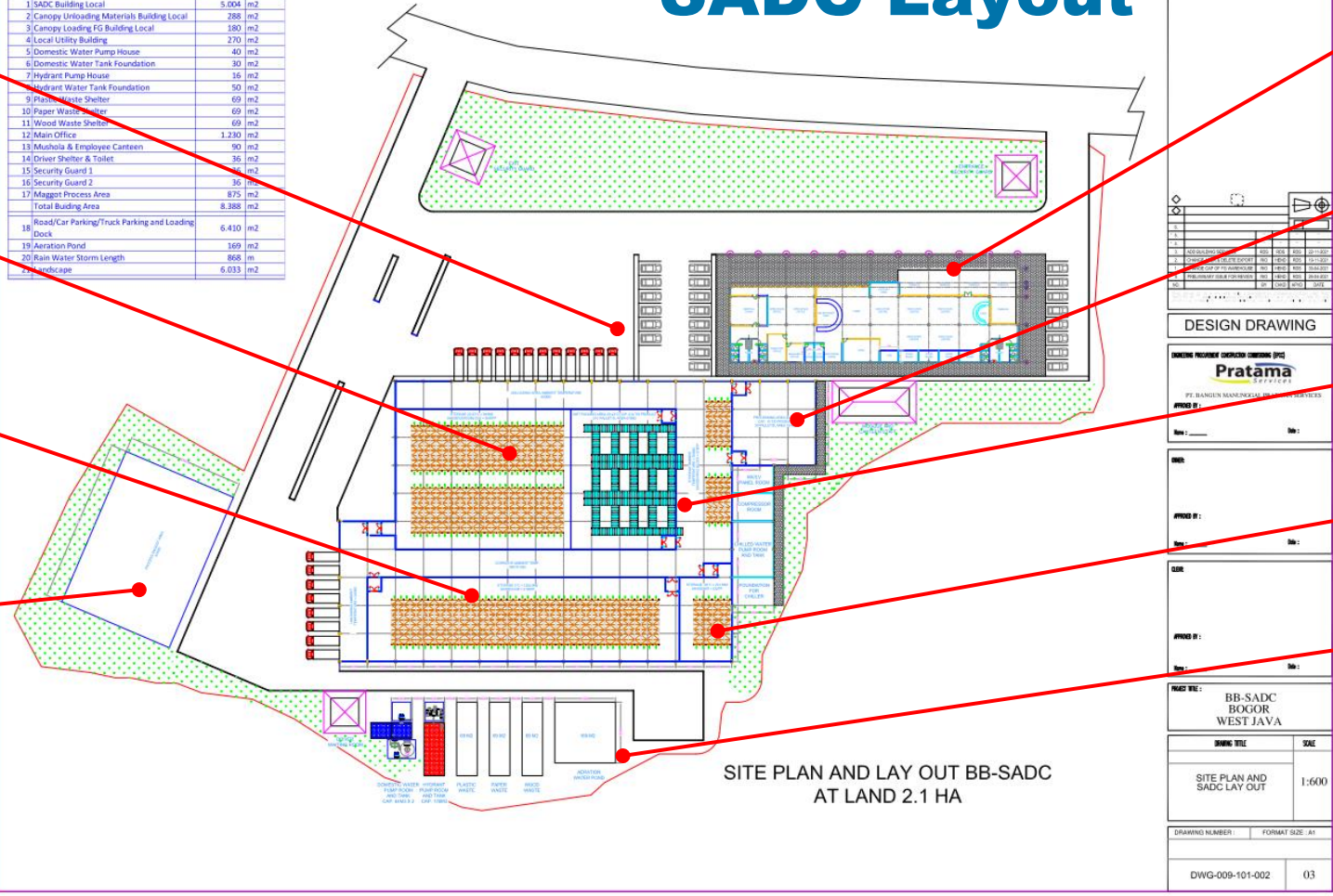
- Process line: puree
- Waste treatment unit

05

Agro-Tourism and F&B

SADC Layout

No	Description	Area/Length	Unit
Building			
1	SADC Building Local	5.004	m2
2	Canopy Unloading Materials Building Local	288	m2
3	Canopy Loading FG Building Local	180	m2
4	Local Utility Building	270	m2
5	Domestic Water Pump House	40	m2
6	Domestic Water Tank Foundation	30	m2
7	Hydrant Pump House	16	m2
8	Hydrant Water Tank Foundation	50	m2
9	Plastic Waste Shelter	69	m2
10	Paper Waste Shelter	69	m2
11	Wood Waste Shelter	69	m2
12	Main Office	1.230	m2
13	Mushola & Employee Canteen	90	m2
14	Driver Shelter & Toilet	36	m2
15	Security Guard 1	36	m2
16	Security Guard 2	36	m2
17	Maggot Process Area	875	m2
Total Buiding Area		8.388	m2
Road/Car Parking/Truck Parking and Loading Dock		6.410	m2
18			
19	Aeration Pond	169	m2
20	Rain Water Storm Length	868	m
21	Landscap	6.033	m2



SITE PLAN AND LAY OUT BB-SADC AT LAND 2.1 HA

Parking Area

Preservation Room T 5-15°C

Preservation Room T 20-23°C

Waste Treatment

Main Office

Agroindustry

Product Handling

Cold Storage T-20°C

Installation: water, electrical, liquid waste disposal

DESIGN DRAWING

WORKING PROJECTOR CHECKED DRAWING (PK)

Pratama
Services

PE. BILALDEN MANANJANG, DEPT. OF PERMITTERS

PROJECT TITLE: BB-SADC BOGOR WEST JAVA

DRAWING TITLE: SITE PLAN AND SADC LAY OUT

SCALE: 1:600

DRAWING NUMBER: DWG-009-101-002

FORMAT SIZE: A1

03

SADC Investment Profile



Total Investment:
USD 32.3 million



Handling Capacity
300 Ton/Day

Working capital
(2 months operational cost)
USD 11.9 Million

- **Commodity Priority:** Chili, Tomatoes, Beans, Carrot, Mangoes, Papaya, and Guava
- **Prospective Export:** High Value Crops (Banana, Mangosteen, Coffee, Brown Sugar etc.)

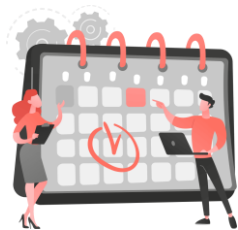
SADC Feasibility Indicator

Based on Business School – Bogor Agriculture University Study (2021)

STATEMENT

FEASIBLE

The Project is declared Feasible with Financial Analysis Indicators



Pay Back Period (PBP)

3.8 year



IRR

22.5%



Net Present Value (NPV)

USD 10.4 million

RURAL NETWORK PLAN



This study proposed to increase effectiveness of value chain system by implementation of efficient VC infrastructures. In the rural area, there will be **Rural Collection Center (RCC)** as SME Post Harvest.

Whereas to bring profitable VC network with demand driven, both domestic and export, there will be connection with farmers group though **Contract Farming and Digital Marketing**.

SADC Management

Digital Technology Application

Organization Structure

President Director; Director of Logistics;
Director of Smart Office; Director of
Business Development
Manager and supervision of fresh
handling, warehousing, agroindustry,
waste treatment and Research &
Development; Staff, Operator &
Technician

Manpower

Executive 7 people
Staff, technician & operator 184 people
Workforce: around thousand farmers &
micro enterprise in rural areas



Regional Socio Economic Impacts

Increase local economic capacity through small and medium enterprise

Upgrading of rural social facilities and service

Application of intermediate and digital technology in rural area

Improvement of job opportunity and farmers income

Establishing agro based value chain for exports

Investment Condition Requirements



First

Clear and clean governance and ownership

Second

Effective Project Delivery :

- *Development*
- *Recognition*
- *Implementation and*
- *Completion*



Third

Proactive stakeholders engagement on supply chain and technology application

Forth

Robust performance management in forecasting, stock accuracy, costumer's satisfactory service and risk mitigation (ISO 22000)





Gangwon Ginseng Cooperative Association Facilities



WELCOME TO INDONESIA

Thank You

