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Workshop on Reducing Food Loss and Waste through Packaging Innovations and Progress Review of FLW in the APEC Region

Member economy report:

PROGRESS REVIEW ON FLW REDUCTION

Indonesia

Ladiyani Retno Widowati
Ira Mulyawanti

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Food Loss & Food Waste: Definition (FAO, 2019)

Food Loss the decrease of food quantity, caused by decisions and actions of food suppliers in food chain, excluding retail, food service providers, and consumers

Food Waste the decrease of food quantity caused by decisions and actions of retail, food services, and consumers

Food Loss

Food Waste

Losses due to mechanical and/or scattered during harvest and sortation

Losses due to scattered and degradation during handling, storage, and transportation between farming and distribution

Losses due to scattered and degradation during processing in industry or domestic, inappropriate sortation (in washing, peeling, slicing, boiling, or processing problems and unintentional scattering

Loss and waste occurred in a market system, i.e., wholesale market, supermarket, retail, and traditional market

Loss and waste occurred during consumption at household level or consumer business, including restaurants and catering

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FLW in Indonesia

2000-2019

115-184 kg/capita/year

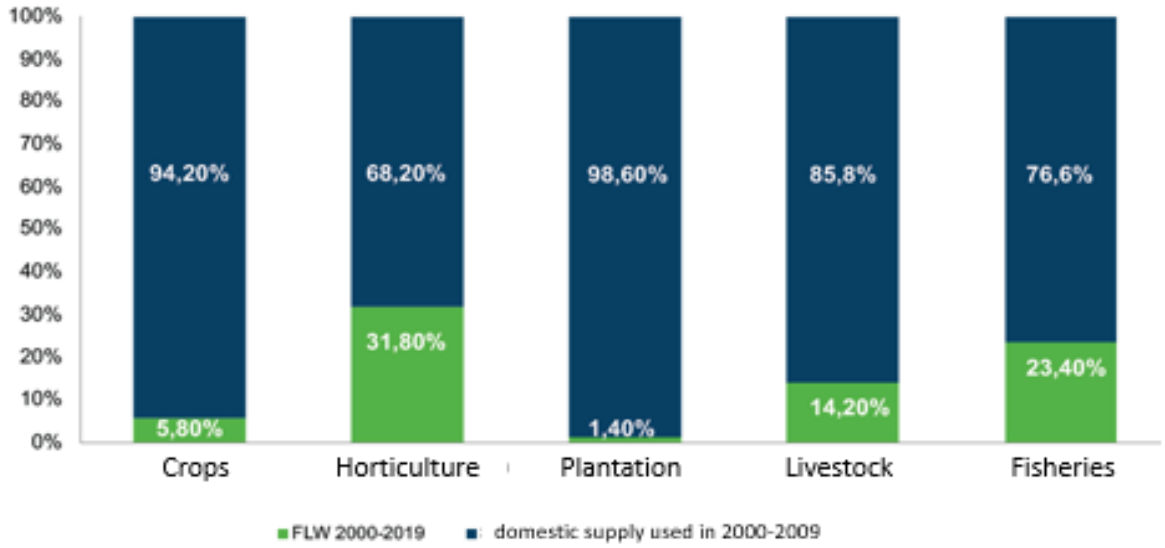
- Supply chain
  - Consumption stage
- Sector and type of food
  - Food crops (crops)
  - Horticultural plant (vegetables)

Causes and drivers of FLW

1. Lack of implementation of Good Handling Practices (GHP)
2. The quality of storage space is less than optimal
3. Market quality standards & consumer preferences
4. Lack of information/education of food workers & consumers
5. Portion advantage & consumer Behavior

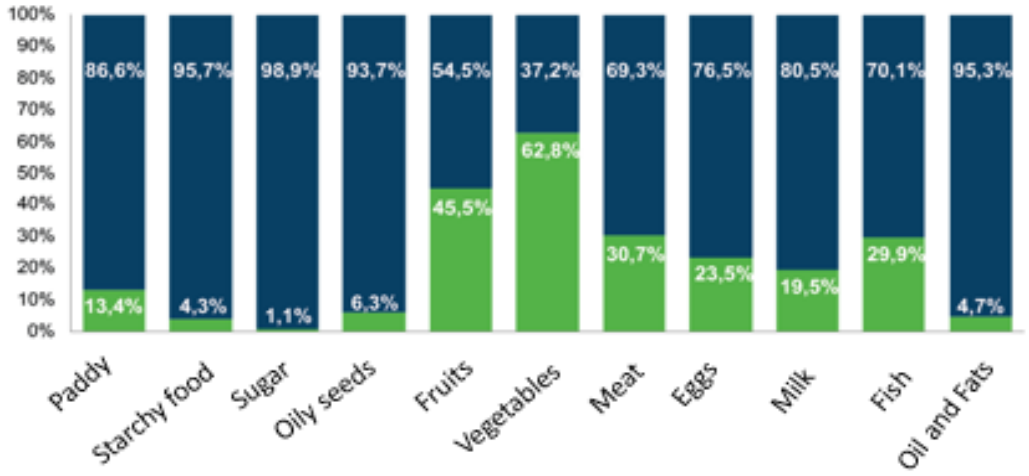
Impact of FLW

ENVIRONMENT	ECONOMIC	SOCIAL
1.702,9 Mt CO2 EK	**213-551 Trillion Rupiah/Year**	**61-125 Million People**
Total emission caused by FLW 2000-2019 (20 year) is estimated at 1,702.9 Mt CO2 ek, on average contribution per year equal to 7.29% of Indonesia's GHG emissions	**Losses caused by FLW Indonesia in the year 2000-2019 estimated at 213-551 trillion rupiah/year or equivalent with 4-5 % of Indonesia's GDP**	**The number of people who can be given access to the loss of content nutrition (energy) from FLW in the year 2000 - 2019 is 61-125 million people or 29-47% of the Indonesian population.**



(a)

The proportion of Food Loss and Waste from 2000 to 2009 compared to the total domestic supply from 2000 to 2009 in 5 food sectors and 11 food categories



Source: Indonesian Ministry of National Development Planning (2021)

REGULATION AND POLICIES RELATED TO FLW AND FOOD PACKAGING IN INDONESIA

No.	Regulations/Policies	Relevance
1.	Law 18/ 2008 on Waste Management	This law aims to achieve sustainable goals for public health and the environment. It is also relevant to the application of a circular economy. It emphasizes waste reduction, reuse, and recycling, as well as proper disposal, to minimize environmental impact and promote resource efficiency
2.	Government Regulation 69/1999 on Food Labeling and Advertisement	An important tool in food packaging Related to food safety and FLW reduction efforts, such as food donation.
3.	Government Regulation 28/2004 on Safe, Quality, and Nutritious Food	Important for food donation in FLW reduction
4.	Government Regulation 17/2015 on Food Security and Nutrition	The establishment of food and nutrition information system is aligned with the FLW reduction efforts
5.	Government Regulation 86/2019 on Food Safety	Important for food donation in FLW reduction
6.	Regulation of The Indonesian Food and Drugs Administration (BPOM) 20/2021 on Food Labelling	An important tool in food packaging Related to food safety and FLW reduction efforts, such as food donation.
7.	Regulation of the Indonesian FDA 20/ 2019 on Food Packaging (in the revision process)	Related to the correlation between food safety and the packaging that is used to increase the shelf life of food, supporting FLW reduction Regulate the safety requirements of recycled packaging
8.	Regulation of Ministry of Agriculture No 44/ 2009 on Good Handling Practices	FLW reduction effort for the handling process. This regulation aims to maintain the quality and competitiveness of agricultural products of plant origin.
9.	GHP, GMP, GDP	As FLW reduction efforts in the handling, processing, and distribution stages

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Policy Action and Initiative to Reduce FLW

Ministry of National Development Planning

Plays a role in formulating FLW management policies and strategies nationally. Collaboration with the Danish government to support FLW management.

Ministry of Agriculture

- Development Technology Innovations
- Standard formulation related to the process or quality parameters
- Dissemination of technology (GHP/GMP) to reduce FLW
- Supporting infrastructure (harvesting and postharvest equipment, including cold storage, PHO, and processing units) with collaboration with the private sector or others

National Food Agency (NFA)

"Stop Wasting Food"

Emphasizes efforts to prevent food waste throughout the supply chain, from production to consumption

Food Safe Movement

Improve consumer behaviors towards food and stabilize food prices and supplies

Non-Government Initiatives

Voluntary actions have been initiated and implemented by non-governmental entities, including individuals, groups, startups, and NGOs, to address food waste. Examples of such initiatives include mindful eating campaigns, maggot development projects, and excess food donation

Examples of Existing Voluntary Actions from Non-Government

Foodbank of Indonesia

FOI NETWORK

Facilitate the food donation from receiving, sorting, QC, warehousing, processing, and distributing excess food for those in need.

Foodcycle

Serving the needy by channeling through and distributing surplus food from various sources such as wedding parties, bakeries, corporate lunch, supermarkets, and FMCGs

Kecipir

Provide an e-commerce platform, harvest management, and delivery of agricultural products and organic food on a circular basis.

Surplus

The first food rescue app in Indonesia which can enable customers to buy meals from food-retailers who have surplus food/haven't sold at the day with 50% discount.

Garda Pangan

Garda Pangan has two lines of activity including business line and a non-profit food bank. The profits they generate from their line of business are used to finance their food bank operations.

Great Giant Pineapple

Great Giant Pineapple made efforts to increases resource efficiency in all business lines. For example, by using 90,000 tons/year of pineapple peel, GGP is able to meet the needs of thousands of animal feeds and cut feed costs.

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Examples of Existing Voluntary Actions from Non-Government

Sarinah Bebas Food Waste

The program is expected to prevent more than 10 tons of food from potentially becoming food waste. At the same time preventing financial losses of up to IDR 500 million for their tenants.

Zero Waste Concept Restaurant

In Indonesia, the concept was firstly introduced by Potato Head Restaurant, Bali where the restaurant does not throw away the left-over food (0%) to the Final Processing Site (landfills) in their daily operational activities.

Beli Jelantah

BETAH
BELI JELANTAH

Beli Jelantah collects used cooking oil supplies from various hotels, restaurants, the food industry, and resident houses to be distributed to the biodiesel producing companies.

Biogas

Household Biogas Program which functions to process kitchen waste into gas and plant fertilizer. Type of household waste that is processed into biogas such as leftover food and vegetables.

Cold Facilities

In an effort to minimize losses, business actors, particularly those with integrated supply chains, are increasingly adopting the extensive utilization of cold facilities.

Biochar

ASOSIASI BIOCHAR
INDONESIA INTERNASIONAL

Biochar implementation in Indonesia has been gaining attention in recent years as a sustainable solution for various environmental and agricultural challenges. Biochar is a type of charcoal produced from biomass waste through a process called pyrolysis.

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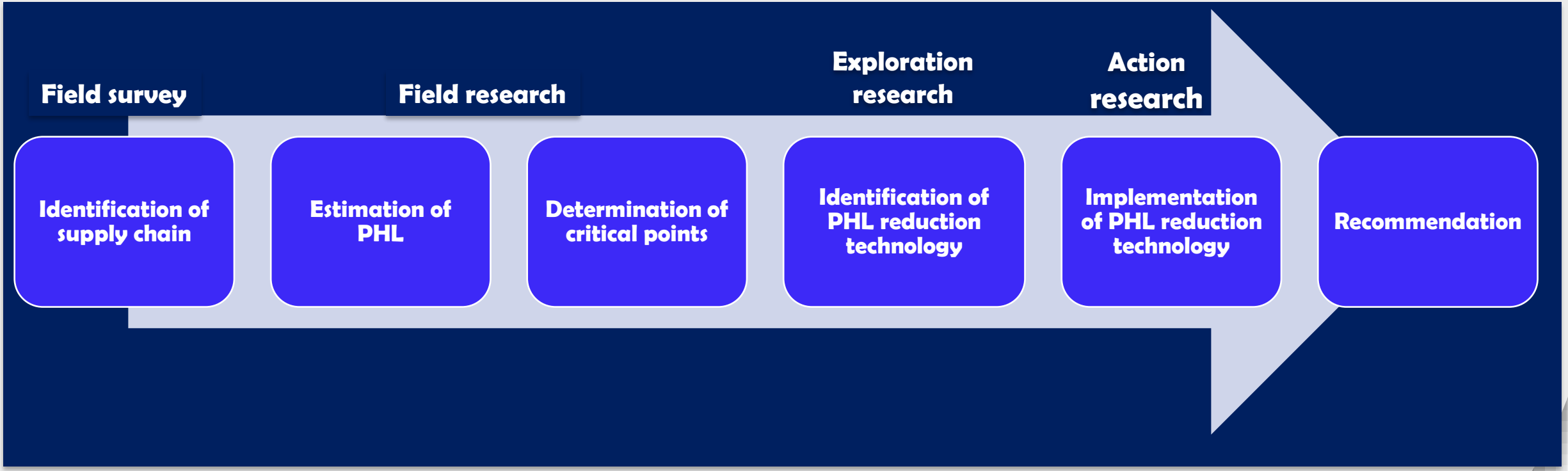
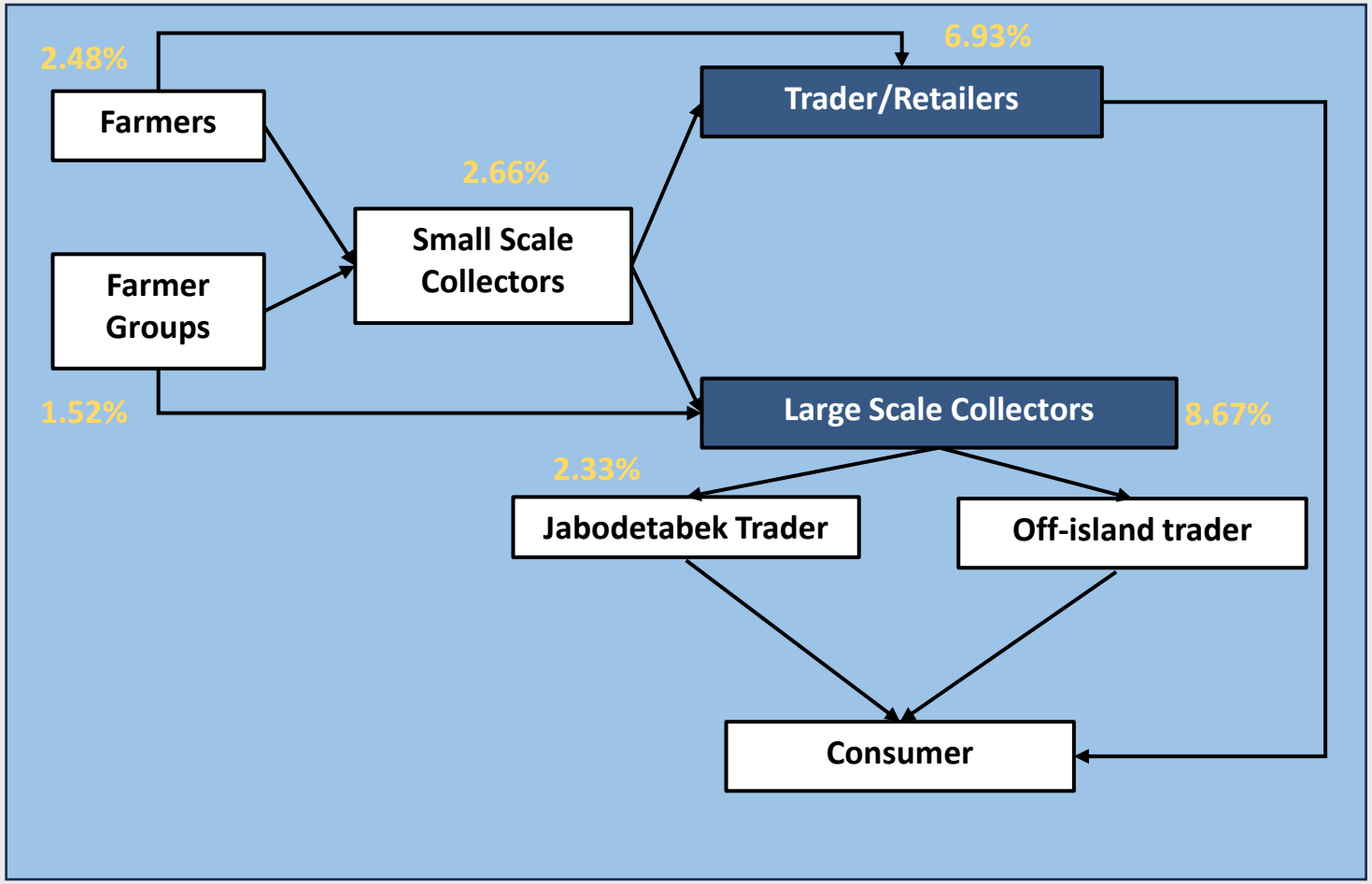
Update on FLW Measurement and Its Reduction Innovations

Case Study FLW and Its Reduction on Chili in Magelang, Center Java, Indonesia



Metodology of measurement and reduction PHL of Chili

Case Study FLW and Its Reduction on Chili in Magelang, Center Java, Indonesia



- Long supply chain: PHL up to *24%*
- Supply chain actors: farmers, small-scale collectors, large scale collectors, traders/retailers
- Similar postharvest handling techniques (inappropriate harvest techniques, manual subjective sortation, no washing treatments, traditional inadequate packaging, inappropriate transportation condition)

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Case Study FLW and Its Reduction on Chili in Magelang, Center Java, Indonesia

Postharvest Losses Reduction Technology Intervention

- Sortation & Grading
- Container
- Transportation

→ Harvest at Farmer Level

- Handling
- Sortation
- Packing

→ Large Collector

- Environmet condition
- Schedule

→ Transportation

→ Retailer

Reduced PHL: 3.49 - 8.86% (62.0 – 85.5% reduction) equivalent to 203,892 tonnes of chili/year

Chili Color Chart

PHL Reduction Technology for Chili

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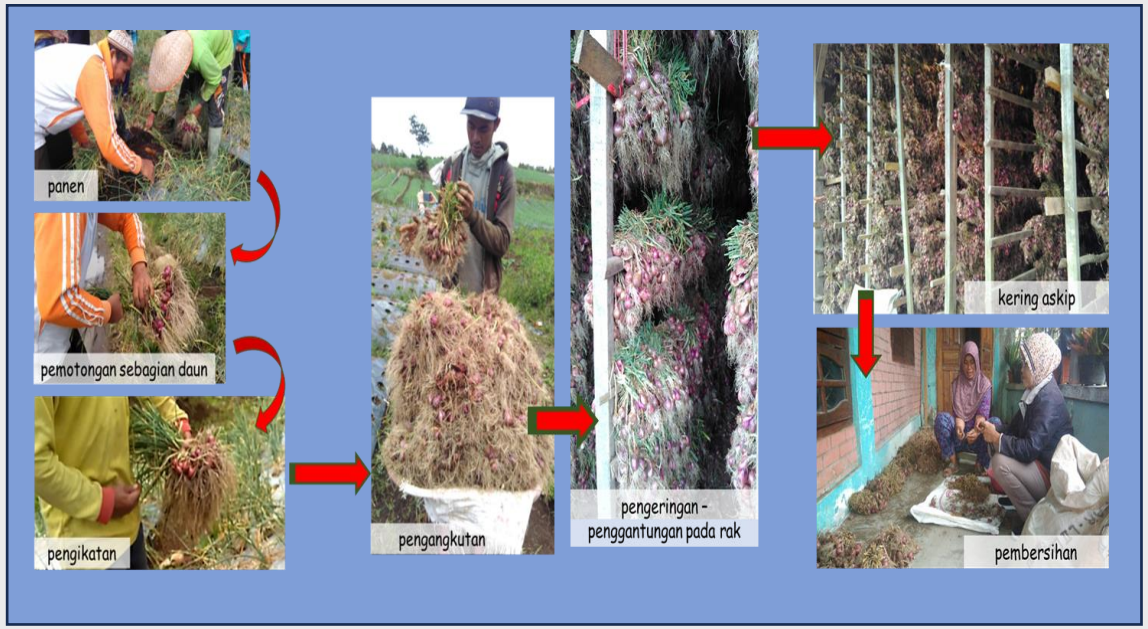
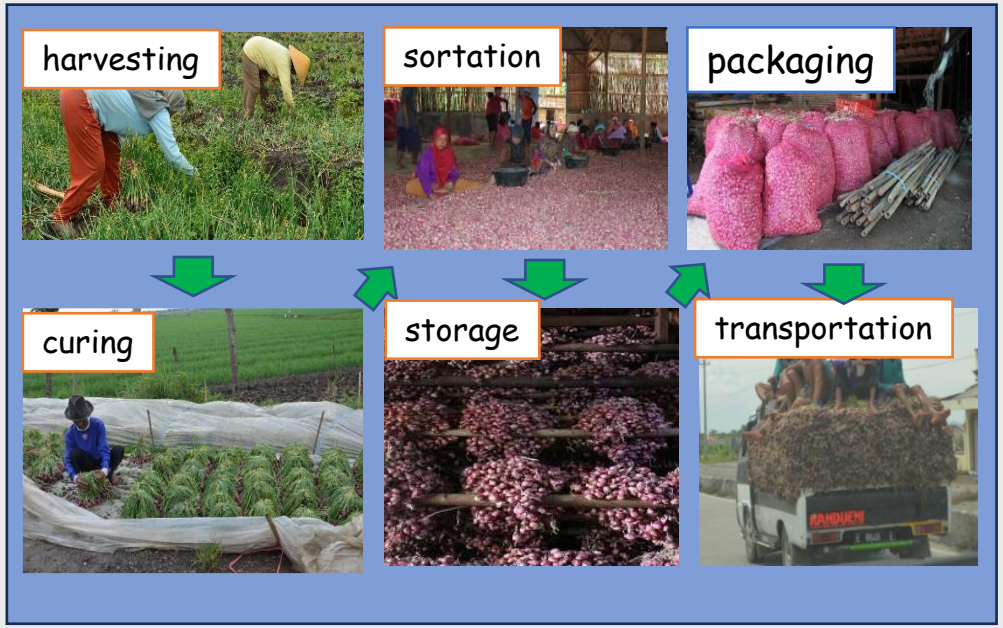
Case Study FLW and Its Reduction on Shallot in Solok Regency, West Sumatra and Brebes Regency, Central Java, Indonesia

Post-harvest losses of shallots up to **27%**, with a critical point in the curing process



PHH of shallot in Solok Regency, West Sumatra (Highland area)



PHH of shallot in Brebes Regency, central Java (Lowland area)

Instore dryer

- More effective and hygienic than sun drying
- Equipped with a temperature and humidity regulator, it also has an aeration system
- Accelerate the curing process of shallots and garlic, especially in the rainy season, and also effective for the curing process in the highland areas with less sunlight
- Highland area: 21 days of curing, being 5-7 days
- Reduce postharvest loss of shallots from 27.5% to 11%

Case Study FLW and Its Reduction on Shallot

Establisment of Domestic Standard for Postharvest Handling of Shallot

BSN BADAN STANDARDISASI NASIONAL

KEPUTUSAN KEPALA BADAN STANDARDISASI NASIONAL
NOMOR 554/KEP/BSN/11/2024
TENTANG
PENETAPAN SNI 9289:2024 PEDOMAN PROSES PASCAPANEN BAWANG MERAH (*ALLIUM CEPA* VAR. *ASCALONICUM SYN ALLIUM CEPA* VAR. *AGGREGATUM*) KONSUMSI

SNI

SNI 9289:2024

Standar Nasional Indonesia

Pedoman proses pascapanen bawang merah (*Allium cepa* var. *ascalonicum syn Allium cepa* var. *aggregatum*) konsumsi

ICS 65.020.99

BSN BADAN STANDARDISASI NASIONAL

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Utilization of Agricultural Waste

Agricultural waste

- Biofertilizer
- Soil Ameliorant
- Animal Feed
- Material for industry :
  - Food: emulsifier (pectin, CMC, etc)
  - Biodegradable packaging
  - Paper
  - Rubber substitution (nano biosilica)
  - Building material
  - etc
- Bio energy

INNOVATION ON REDUCTION OF WASTE:

Environmentally Friendly Packaging from Agricultural Waste

Biofoam

Modified Atmosphere Packaging (MAP) with biofoam

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Innovation on Reduction of Waste: Environmentally friendly packaging from agricultural waste

Bioplastic

Liquid Nanobiosilica

Nanobiosilica powder

Alcaline carbon

Traditional Indonesian Food Packaging

Besek/bamboo

Banana leaf

Taro leaf

Teak leaves

Bongsang/bamboo

Traditional Jug/Kendil clay

Coconut leaf

Water apple leaves

RECOMMENDATION

Behavior changes	• Women's empowerment in increasing public understanding related to food loss and waste and its impact on food security and the environment • Education for food producers and consumers to increase knowledge about FLW
Suply chain	• Simplification of supply chain • Technology intervention (GHP/GMP) • Education/capacity building for human resources of business actors at each point of the supply chain related to the GHP and or GMP
Infrastructure	• Facilitating a cold storage system • Improve access to distribution and marketing, especially from the farm to the PHO and then to the market
Utilization of FLW	• Encourage the development of a food distribution platform • FLW management that supports the circular economy, such as processing of food waste for compost, animal feed, organic fertilizer, bioenergy, and biodegradable packaging
Policy	• Determination of process-related standards (GHP/GMP/GDP) and also quality parameters

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Thank You

Terima Kasih