Asia-Pacific
Economic Cooperation

Assessment Studies on Food Losses/Wastes in the Philippines*

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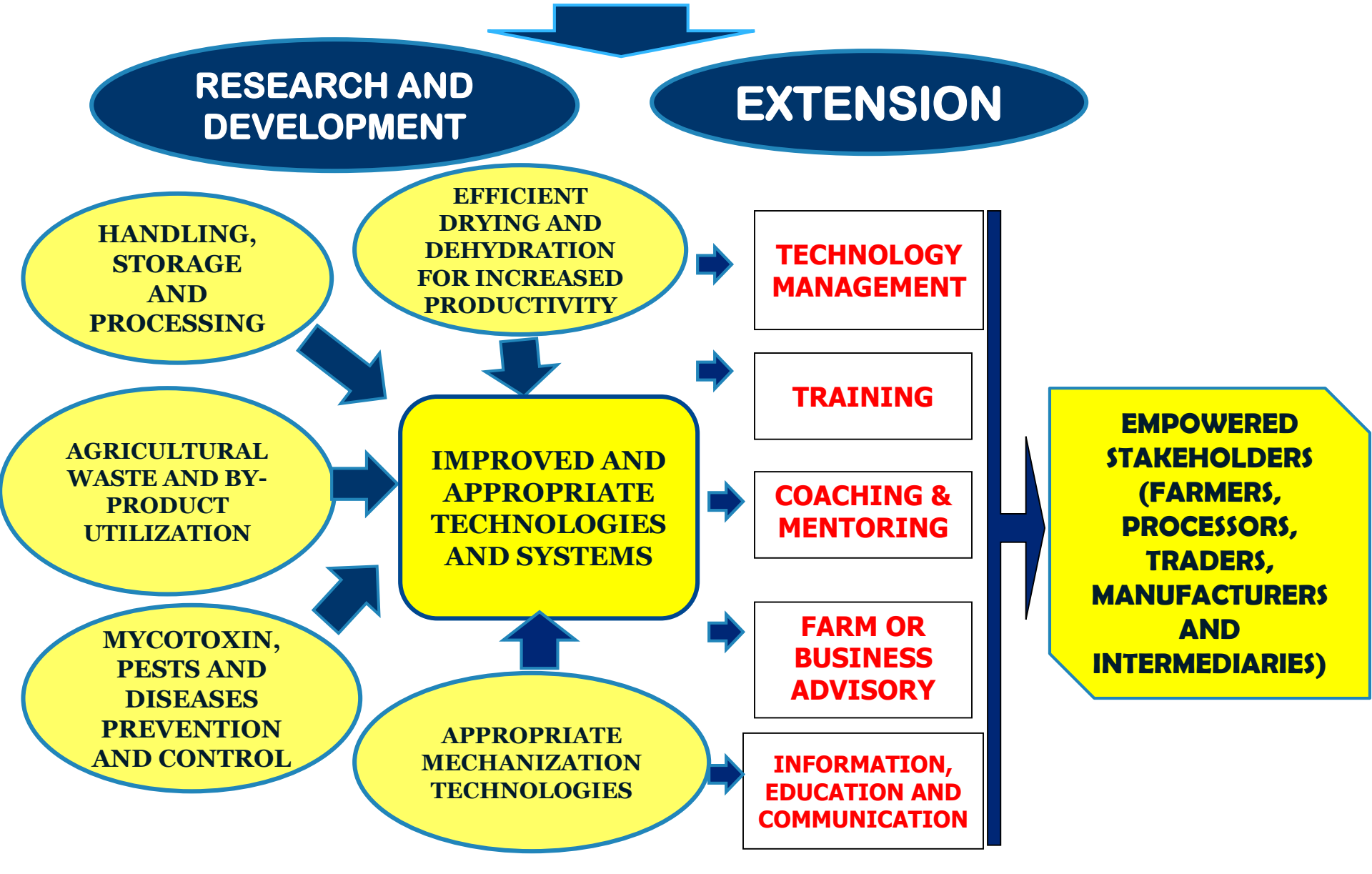
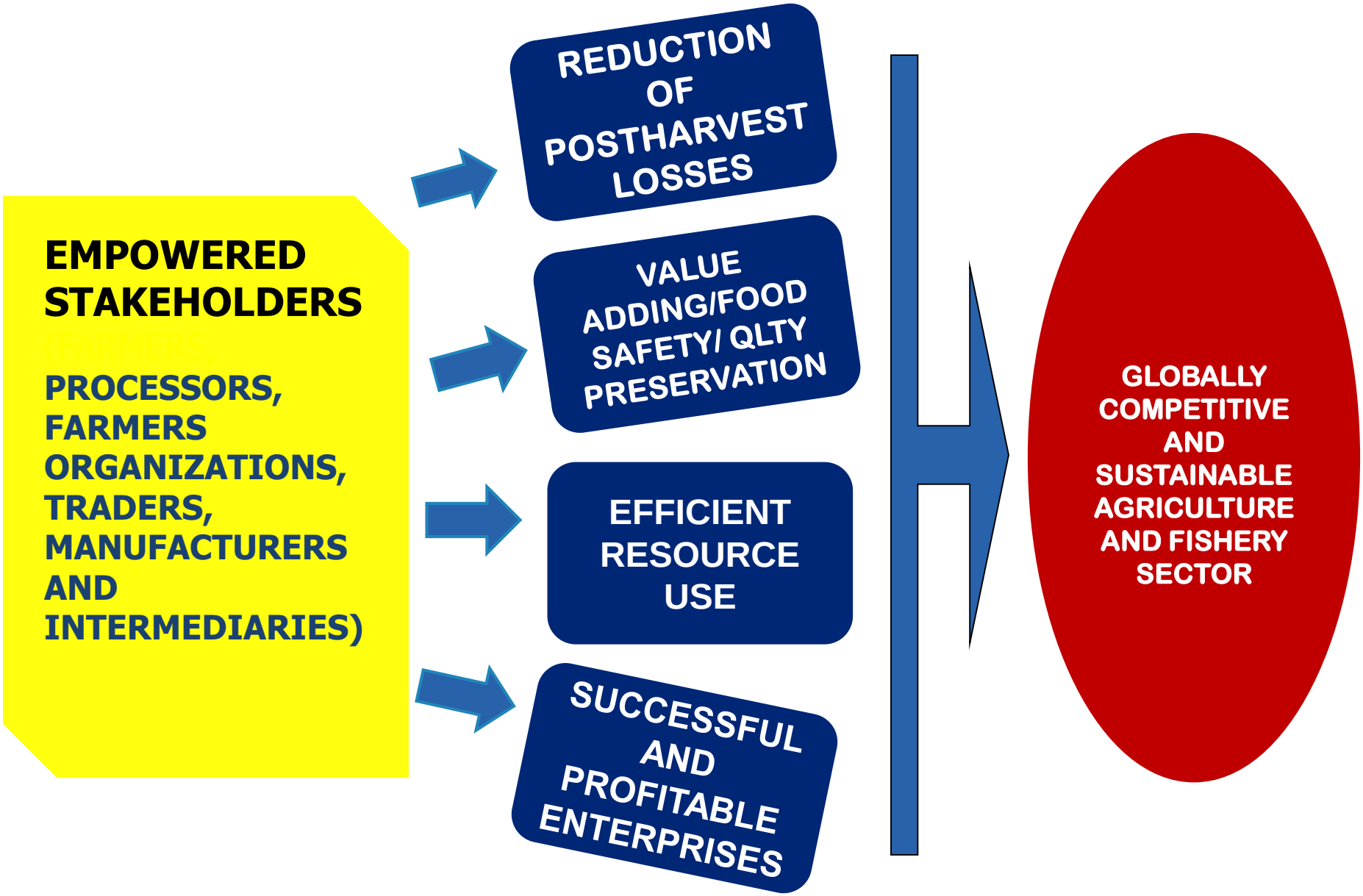
DEVELOPMENT FRAMEWORK OF PHILMECH

TWIN MANDATE




EMPOWERED STAKEHOLDERS
(FARMERS,
PROCESSORS, FARMERS ORGANIZATIONS, TRADERS, MANUFACTURERS AND INTERMEDIARIES)
REDUCTION OF POSTHARVEST LOSSES
VALUE ADDING/FOOD SAFETY/ QLTY PRESERVATION
EFFICIENT RESOURCE USE
SUCCESSFUL AND PROFITABLE ENTERPRISES
GLOBALLY COMPETITIVE AND SUSTAINABLE AGRICULTURE AND FISHERY SECTOR

Presentation Outline

1. Introduction
   - food losses
   - food supply chain
2. Completed researches on food loss
3. Supply Chain studies
4. Addressing food losses
5. Summary and Conclusion

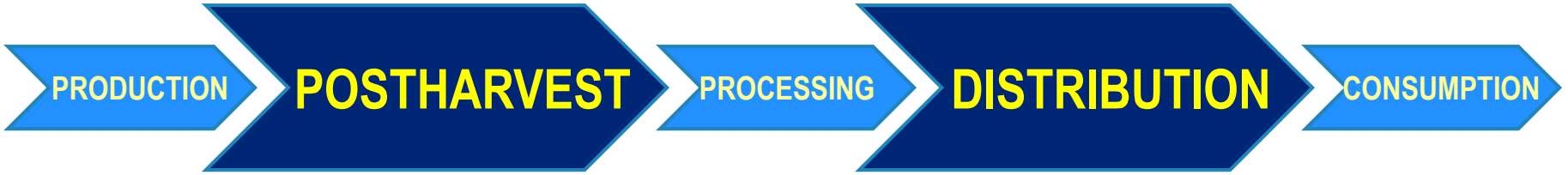
Introduction

Food losses – refer to the decrease in edible food mass throughout the **food supply chain (FSC)*** intended for human consumption
(FAO, 2011)

*FSC includes:

Introduction

PHilMech FSC R & D focus more on



Handling, storage and transport

Wholesaler, supermarkets, retailers and wet markets

PHilMech completed researches on assessing food losses/wastes

COMMODITY	LOSSES (%)		REFERENCES
	POSTHARVEST	DISTRIBUTION	
Paddy/Rice	16.47*	-	Salvador et al, 2012
Corn	7.18	-	Salvador et al, 2007

*Includes milling loss at 5.52% (rice mill processing)

Consumer loss = 9 gms of milled rice (PHilRice, 2013)
≈ 2 tablespoon of cooked rice\person\day

PHilMech completed researches on assessing food losses/wastes

COMMODITY	LOSSES (%)		REFERENCES
	POSTHARVEST	DISTRIBUTION	
Mango	11.00-14.72	WS -3.06-3.83 Retail - 1.62-2.99	BPRE and PHTRC, 2009
Banana (lakatan	0.54 – 3.00	WS - 6-12	BPRE and PHTRC, 2009
latundan)		Retail -16-19	
Cabbage	5.84-6.27	WS –0.33 - 0.80	BPRE and PHTRC, 2009
		Retail -13.13-23.42	
Carrots	0- 6.08	WS-0.00	BPRE and PHTRC, 2009
		Retail -0.14-4.17	





PHilMech completed researches on assessing food losses/wastes

COMMODITY	LOSSES (%)		REFERENCES
	POSTHARVEST	DISTRIBUTION	
Onion (red bulb)	3.90	27.86	Calica et al, 2016
Onion (shallots)	1.08-4.80	12.32-15.60	Calica et al, 2016
Eggplant	0.15-35.44	5.44-7.75	Flores et al, 2016
Sweet potato	17.25-19.60	8.58-18.05	Flores et al, 2016

Supply Chain of Eggplant (Flores et al, 2016)

POSTHARVEST

Farmer-Harvest/Handling



Loss = 0.06-0.44%

Transport to Local Assembler


Loss = 0.09-35%

DISTRIBUTION

Wholesaler

Loss = 0.05-0.22%

Retailer

2 days after harvest

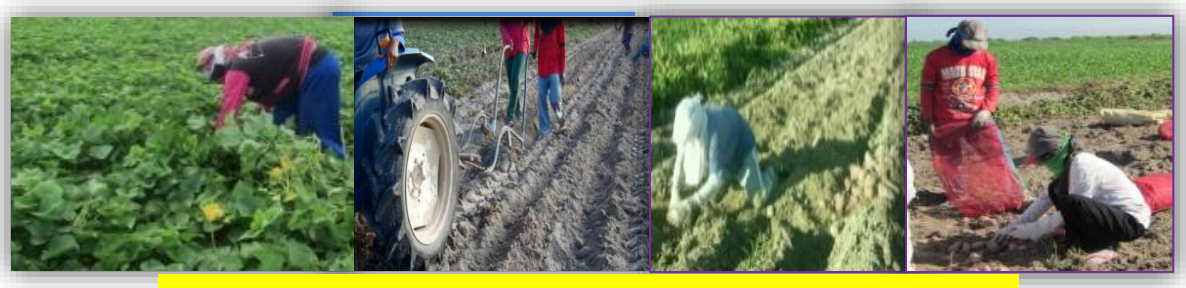
Loss = 4.39-7.53%

Total Loss 4.73-8.05%

Supply Chain of Sweet Potato (Flores et al, 2016)

POSTHARVEST

FARMER LEVEL/HANDLING



Loss = 17.12-18.42%

HAULING/TRANSPORT

Loss = 0.13-1.18%

DISTRIBUTION

WHOLESALER

Loss = 0.0-5.84%

RETAILER (1-7 day s)

Loss = 8.58-12.21%

Total Loss
25.83-37.65%

Addressing food loss/waste

Issues and concerns	Recommendation	Program/Action Plan
▪ Low milled rice recoveries ▪ High milling losses	▪ Introduction of more efficient and modern rice mills ≥ 65% Milling Recovery	▪ Distribution of rice processing complex (RPC) to qualified farmers' organization by the Department of Agriculture
▪ Accumulation of rice hulls 	▪ Utilization of rice hulls as fuel source ▪ Design and development of rice hull furnaces (RHF)	▪ Electric/power generation ▪ Distribution/ retrofitting of RHF for mechanical dryers

Addressing food loss/waste

Issues and concerns	Recommendation	Program/Action Plan
▪ Insufficient rice supply	▪ Design and development of brown rice huller ▪ Encourage Filipinos to eat brown rice	▪ Field testing of portable brown rice huller with 150kgs/hr capacity and 72.5% milling recovery

Addressing food loss/waste

Issues and concerns	Recommendation	Program/Action Plan
▪ Quality deterioration of fruits and vegetables due to delay in transport resulting to high transportation losses and costs	▪ Introduction of tramline system to haul produce from the farm to the pick up area	▪ Construction of tramline system through public private partnership (PPP)

Addressing food loss/waste

Issues and concerns	Recommendation	Program/Action Plan
▪ Quality deterioration of fruits and vegetables due to delay in transport resulting to high transportation losses and costs	▪ Provision of cold chain facilities i.e refrigerated trucks, chillers ▪ Building of trading posts, barangay and municipal food terminals (BFT)	▪ Distribution of refrigerated trucks and chillers ▪ Establishments of trading posts and barangay food terminals – retail markets near the farms

Addressing food loss/waste

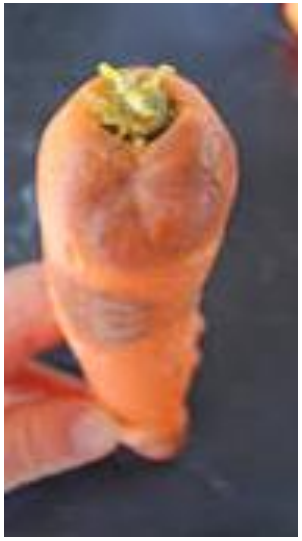
Issues and concerns	Recommendation	Program/Action Plan
High onion losses from cold storage	▪ Utilization of onion leaves and storage wastes ▪ Alternative storage technologies using ambient temperature	▪ Design and development of biogas technology

Addressing food loss/waste

Issues and concerns	Recommendation	Program/Action Plan
Onion rejects due to discolored, oversized, rotten, sprouted and irregularly-shaped onions	▪ Search for potential markets of minimally processed onion	Further studies on the marketability of minimally processed onion

Addressing food loss/waste

Issues and concerns	Recommendation	Program/Action Plan
Bruising of carrots due to manual washing	▪ Design and development of carrot washer	▪ Field testing and commercialization of the mechanized carrot washer



Addressing food loss/waste

Issues and concerns	Recommendation	Program/Action Plan
Pre-harvest loss due to pest and diseases manifest at harvest of eggplant	▪ Development of suitable packaging materials to reduce physiological weight loss (use of films, biological surface coatings, etc)	▪ Field testing of recommended packaging materials

Addressing food loss/waste

Issues and concerns	Recommendation	Program/Action Plan
Inefficient soil digging equipment causing mechanical damage of sweet potato at harvest	▪ Modification and improvement of the existing sweet potato digger	▪ Field testing and pilot testing of improved sweet potato digger

Addressing food loss/waste

Issues and concerns	Recommendation	Program/Action Plan
Discarded coconut water from matured coconut (to be used for copra, virgin coconut oil production, etc)	▪ Coco water to be processed (pasteurized and sterilized) as energy drink; ▪ Establishment of coco water processing plant	Pilot testing of coconut water processing plant for coconut farmers

Summary and Conclusion

1. **Quantification of food losses at the food supply chain were done at the postharvest and distribution chains only.**
2. **Mango, carrots, eggplant and sweet potato have higher postharvest losses as against the losses at the distribution chain.**
3. **High distribution losses were observed for banana, cabbage and onions.**
4. **Baseline studies to determine postharvest losses from harvest up to marketing of different crops, fruits and vegetables were measured by PhilMech. Different ways on how to reduce these identified losses were addressed through implementation of sequel projects. Also utilization of wastes through recycling and reducing were also ventured.**

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(THANK YOU)

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