

# FINANCING FOR SUSTAINABLE AGRICULTURAL MECHANIZATION IN INDONESIA



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CSAM



# OUTLINE

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**PRESENT STATUS OF AGRICULTURAL  
MECHANIZATION IN INDONESIA**

2

**CUSTOM HIRING OF AGRICULTURAL  
MACHINERY SERVICE IN INDONESIA  
(CHAMS)**

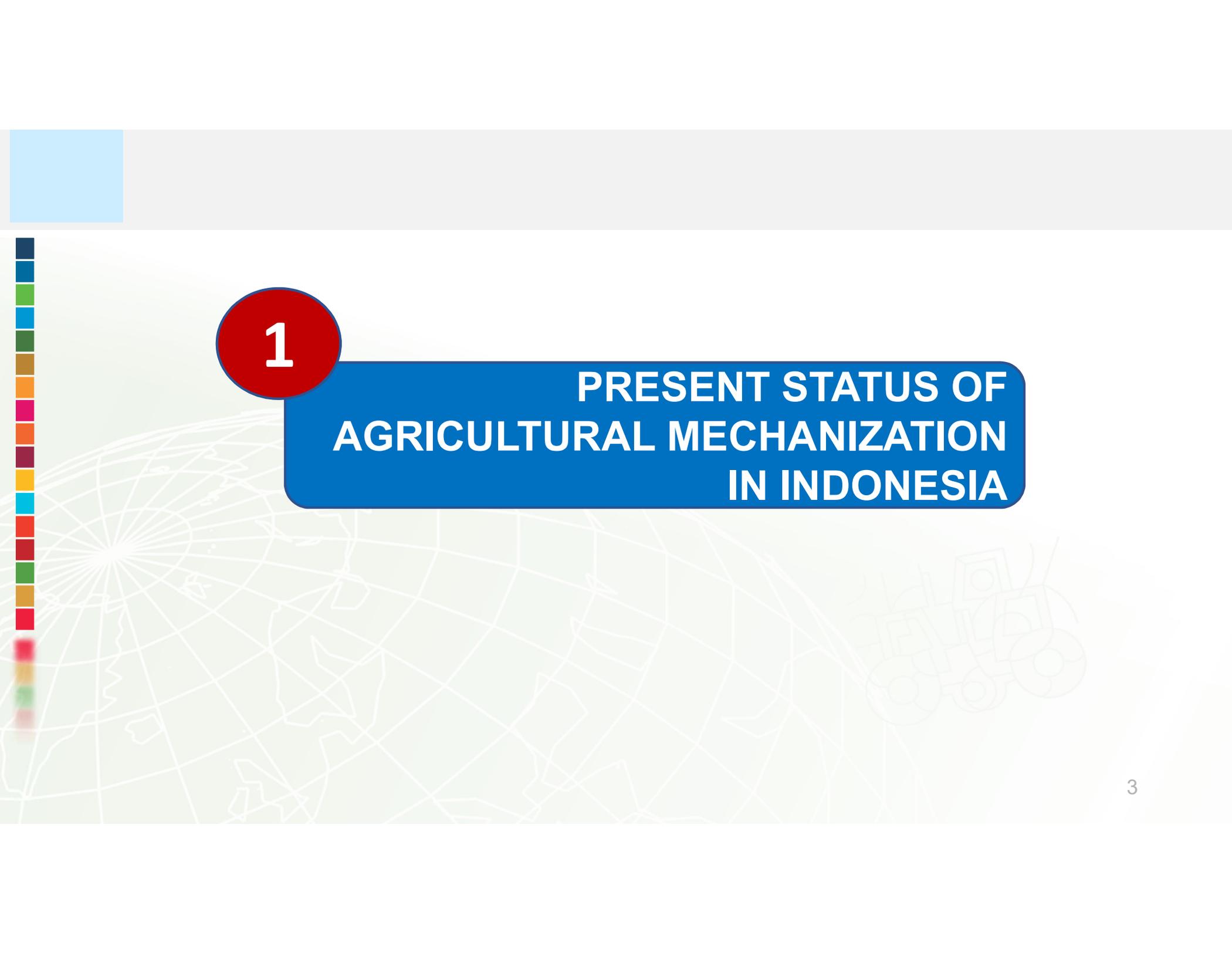
3

**CHALLENGE AND STRATEGY IN DEVELOPING  
SUSTAINABLE AGRICULTURAL MECHANIZATION IN  
INDONESIA**



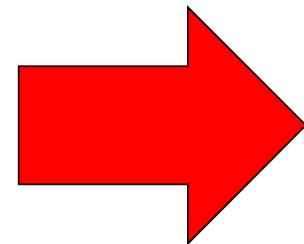
1

# PRESENT STATUS OF AGRICULTURAL MECHANIZATION IN INDONESIA

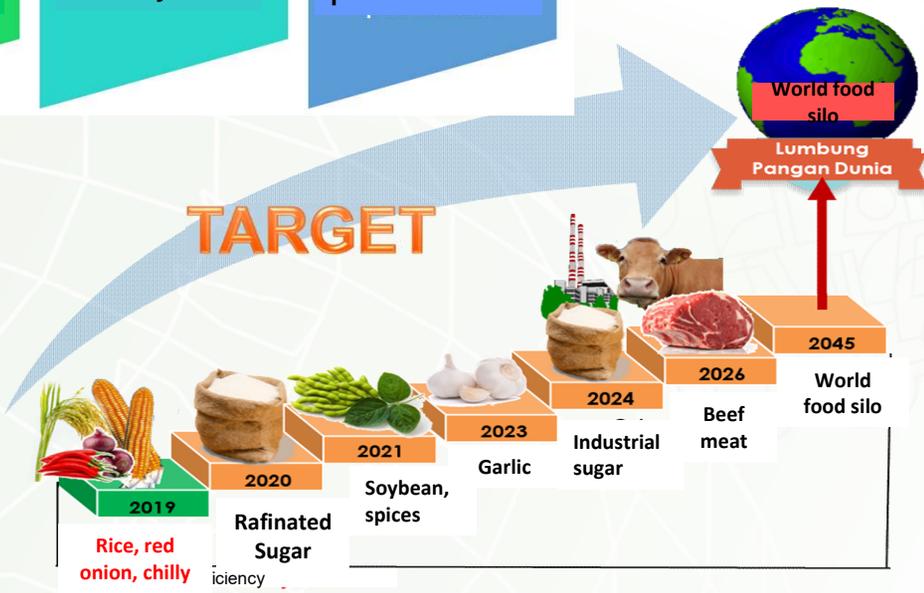


# VISSION OF INDONESIAN AGRICULTURAL DEVELOPMENT 2045 (BAPPENAS, 2018)

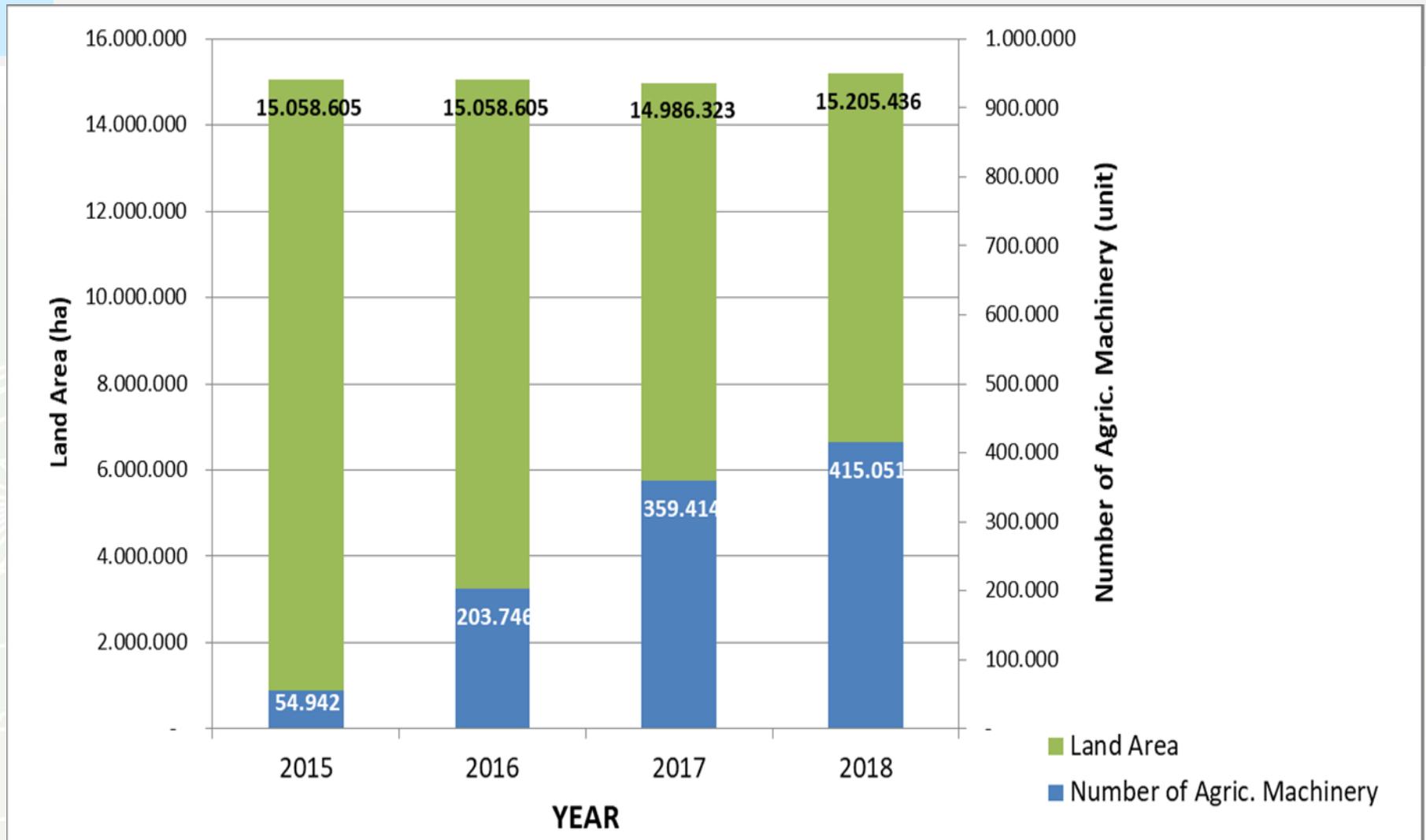
Food self sufficiency, Farmer well fare and Sustainable food resilience



Source: Bappenas, 2018



# AGRICULTURAL LAND AND THE NUMBER OF AGRICULTURAL MACHINERY IN INDONESIA



**The use of Agricultural machinery has speed up field activity in many provinces in Indonesia**

Field activity	Manual (man days)	Full Mechanized (day)	Time Reduction	
			(man days)	%
• Land preparation	20	3	-17	-85,0
• Seedling and planting	19	7,5	-11,5	-60,5
• Weeding	15	2	-13	-86,7
• Harvesting	40	7,5	-32,5	-81,3
<b>Total</b>	<b>94</b>	<b>20</b>	<b>-74</b>	<b>-78,4</b>

## THE USE OF AGRICULTURAL MACHINERY HAS REDUCE LABOR COST/ CROP

Activity	Manual (Rp/ha)	Full Mecanized (Rp/ha)	Cost reduction	
			Rp	%
• Land preparaation	1.600.000	1.200.000	-400.000	-25,0
• Seedling and planting	1.720.000	1.100.000	-620.000	-36,0
• Weeding	1.200.000	510.000	-690.000	-57,5
• Harvesting	2.857.125	2.285.700	-571.425	-20,0
<b>Total</b>	<b>7.377.125</b>	<b>5.095.700</b>	<b>-2.281.425</b>	<b>-30,9</b>

## The impact of agricultural machinery on labor productivity and cost in Indonesia

Activity	Duration		Labor cost (Rp/ha)	
	Manual	Machine	Manual	Machine
Land Preparation	320-400 (+/- 50 man days)	4-16 (h/ha)	2.000.000	1.200.000
Planting	+ 200 (+/- 30 man-days)	3-6 (h/ha)	750.000	600.000
Weeding	+ 130 (+/- 16 man-daus)	+ 15 (h/ha)	0,9-1,2 million	750.000
Harvesting	+ 252 (+/- 31 man-days)	2-5 (h/ha)	2,4-2,8 million	1,8-2 million
Threshing	+ 40 kg/h (+/- 19 man-days)	0.6 -1.5t/h	-	-

## REDUCTION ON LOSSES DUE TO THE USE OF MACHINERY

ACTIVITY	LOSES (%)		QUALITY (%)	
	Existing method	Improved machinery	Existing method	Improved machinery
Rice harvesting	<u>+ 9,4</u>	<u>+ 3</u>		
Threshing	<u>+ 5</u>	<u>+ 2</u>		
Drying :	-	-		
▪ Milling			<u>+ 59</u>	<u>+ 62</u>
Recovery			<u>+ 35</u>	<u>+ 65</u>
▪ Whole grain			<u>+ 65</u>	<u>+ 35</u>
▪ Broken grain				

Indonesian Agency for Agricultural Research and Development, 2016



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## CUSTOM HIRING OF AGRICULTURAL MACHINERY SERVICE IN INDONESIA (CHAMS)



**TRADITIONAL/  
SUBSISTENCE FARMING**



**MODERN FARMING**



Agricl. Mach. grant  
(2012-2017):

- > Pre Harvest machinery: 317.598 unit
- > Post harvest machinery: 41.816 unit



Better management of agricl. machinery



Optimize use of agri. machinery

- Supervision
- Control
- Training
- Monitoring

Business management



- 10.009 (79,3%) Custom hiring level I
- 2.157 (17,1%) Custom hiring level II
- 448 (5,6%) Custom hiring level III

# Custom Hiring for Agricultural Machinery Service (CHAMS)

- ➔ Rural economic institution engaged in services to optimize agricultural machinery utilization, both for the farmer's group and the others to get profit
- ➔ Guideline for development of CHAMS → MOA Decree 25/Permentan/PL.130/5/2008
- ➔ Facilitate agricultural machinery procurement,
- ➔ Develop demonstration areas, especially for new agricultural machineries
- ➔ Improve research and development capacity,
- ➔ Training and supervision

# Challenge of the Development of CHAMS

- ❖ Limited capability of extension workers, manager and operator of CHAMS
- ❖ Poor infrastructures : workshop, farm road, irrigation facility
- ❖ Lack of land forming and farm road for efficient operation and mobilization of agricultural machineries
- ❖ Limited budget and facility for training and supervision
- ❖ Poor access to the information of : agricultural machineries, capital n spare parts
- ❖ Poor management Information System of agricultural machineries

# Challenge of the Development of CHAMS

- ➔ Most of extension worker has no agricultural and bio-system engineering background and has not been trained
- ➔ Manager and operator of CHAMS are mostly not well trained on both technical and business aspect
- ➔ Poor supporting mechanization infra-structures: storage, farm road, operational materials, workshop, small size of agricultural land



# PROGRAM TO IMPROVE CHAMS

- ❖ Encourage self development of CHAMS through private sector and farmers participation and empowerment based on local needs and conditions
- ❖ Increase ownerships of agricultural machineries by farmers through various credit schemes, including down payment subsidy and purchasing guarantee
- ❖ Improve infra-structures related to CHAMS development as well as operational materials
- ❖ Increase budget for training and supervision

## PARTICIPANT, MATERIALS, RESOURCE PERSON AND IMPLEMENTING UNIT

Participant	Materials	Resource person	Implementer
Agricultural Regional Office Staff	Introduction financial aspects of agricultural mechanization, identification of agricultural machineries need, CHRSM business and management, monitoring, evaluation and reporting	ICAERD, University, Directorate of Agricultural Machinery	Directorate of Agricultural Machinery
Extension workers	Introduction and agricultural mechanization financial aspects , identification of needs, machineries operation and maintenance, agribusiness and CHRSM management	ICAERD, University, Regional Office of Mechanization, BPTP, Agent of agricultural machineries	Province Agricultural Office
Manager of CHAMS	Introduction and identification of needs of agric.mechanization, agribusiness and CHRSM management	University, District Office of Mechanization, BPTP, Agent of agricultural machineries	District Agricultural Office
Farm machineries operator	introduction, operation and maintenance of agricultural mechanization	University, District Office of Mechanization, BPTP, Agent of agricultural machineries	District Agricultural Office

# FUTURE DEVELOPMENT OF CHAMS

- Encourage farmers community and private sector participation
- Self-reliance based on the needs and conditions of the region and the potential of local resources
- Develop institution and infrastructure
- Introduce of new machineries and development of pilot models of agricultural development programs followed by intensive training
- Develop appropriate Management of Information System for agricultural machinery, integrated with Planting Callendar
- The government acts as a regulator and facilitator in the selection and agricultural machinery procurement
- Giving reward for the best and good CHAMS



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**CHALLENGE AND STRATEGY IN  
DEVELOPING SUSTAINABLE  
AGRICULTURAL MECHANIZATION  
IN INDONESIA**

# CHALLENGES

- a) Miss match between agricultural machinery and agroecosystem, socio-economic and cultural condition of Indonesian farmers in each district.
- b) Lack of number and capability of human resources dealing with agricultural mechanization development are weak.
- c) Inspection and control of agricultural machinery at the market are weak.

## STRATEGY FOR DEVELOPMENT OF SUSTAINABLE AGRICULTURAL MECHANIZATION TO SUPPORT RICE PRODUCTION AND SELF SUFFICIENCY AND EXPORT

Based on the experience in developing agricultural machinery custom hiring unit, Agricultural Mechanization in Indonesia in Indonesia will sustain if there are:

- a) Able to respond the problem in the right manner,
- b) Has comparative advantage compare to other technology,
- c) Suitable with farmer and farming condidtion,
- d) Environtmentally acceptable,
- e) Give benefit and better income to the stakeholder,
- f) Available after sales service guarantee are available (training for manager, technician, operator, spare part, repair and maintenance).

# STRATEGY TO IMPROVE CUSTOM HIRING PERFORMANCE

1. Provide grand to farmer and farmer group
2. Optimie existing agricultural machinery through developing various model of sustaiable agricultural mechanization
3. Strenghtening Custom Hiring Business Unit (manager, technician, operator and worshop)
4. Improve the capability of custom hiring manager and technician
5. Giving reward for the best and good custom hiring
6. Use application (smart mobile application for agricultural custom hiring service) to ease and speed up service

# DEVELOPMENT OF AGRICULTURE 2020

ADVANCED, INDEPENDENT & MODERN



## PRODUCTION & PRODUCTIVITY

- National movement to increase productivity, production and exports
- Increase in livestock population
- Agriculture HR Development
- Family Farming
- Agriculture Entering School

## MECHANIZATION & RESEARCH

- Development and application of agricultural mechanization (pre and post harvest)
- **Accelerating the use of technological innovation**

## LOW COST AGRICULTURE

- Facilitation of agricultural financing (insurance and farm banks)
- Corporate-based area development
- Export acceleration (manufacturing service)

## AGRICULTURAL EXPANSION

- Land use optimization.
- Water supply (irrigation, reservoirs, waterworks)

# CHAMS ONLINE



One alternative to foster farmers' participation in the financing of agricultural machinery

LAUNCHING 28 SEPT 2018



Thank You!

