



Republic of the Philippines
Department of Agriculture
OFFICE OF THE SECRETARY
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Quezon City 1100, Philippines

19 September 2019

MEMORANDUM

TO : EXECUTIVE DIRECTOR BALDWIN G. JALLORINA
Philippine Center for Post-Harvest Mechanization and Development


FROM : THE DIRECTOR FOR FIELD OPERATIONS SERVICE AND
CHAIRPERSON, RCEF NATIONAL PROGRAM COORDINATION TEAM

SUBJECT : SIGNED IMPLEMENTING GUIDELINES OF THE MECHANIZATION
PROGRAM UNDER THE RICE COMPETITIVENESS ENHANCEMENT
FUND (RCEF)

This is to officially endorse to your Office for publication and dissemination to concerned DA Agencies/Offices, the signed Implementing Guidelines of the Mechanization Program under the Rice Competitiveness Enhancement Fund (RCEF).

Thank you.


ENGR. ROY M. ABAYA

Received by:  9/19/19
Gianella San Jose

IMPLEMENTING GUIDELINES FOR THE RICE COMPETITIVENESS ENHANCEMENT FUND – MECHANIZATION PROGRAM

Section 1 BACKGROUND

The Philippines is now entering into a tariff-based regime with the lifting of the quantitative restriction (QR) on rice after three extensions granted by the World Trade Organization (WTO). The first QR extension was 1995 to 2005 followed by the second extension from 2005-2012. The third and final QR expired in July 2017 and because of this, President Rodrigo R. Duterte, approved the Rice Tarrification Law (RA 11203) last February 14, 2019 to replace the quota with tariffs.

Quantitative restriction is a WTO trade rule instrument that restricts the entry of imported goods, or rice in the case of the Philippines. On the other hand, a tariff-based regime is a WTO trade rule that allows open and free entry of good as long as taxes and custom duties are paid in accordance with tariff rates.

There is a need to liberalize because it is the provision of our agreement with the WTO. The Philippines is a signatory to the WTO and has lifted quantitative restrictions on imports of food products. Import restrictions were lifted on rice importation along with the approval of the RA 11203 or commonly known as Rice Tarrification Law. The law will impose a tariff on rice importers to be used for the rice competitiveness enhancement fund. Importers of rice will be required to pay 35% levy or tariff on rice imports from ASEAN countries, and a 50% tariff on all imports from non-ASEAN countries.

The law aims to prevent another shortage of rice supply and to ensure that the low price of commercial rice is maintained in local markets. The tariff proceeds will go to the farmers for programs that make them competitive, and an allocation of P10 billion per year for the period of six years was committed to the Rice Competitiveness Enhancement Fund or Rice Fund. This fund will be utilized for the improvement of farm machinery and equipment, seed production, training for rice farming, and loan programs among other means to help the local farmers and make them ready for the possible impact of the entry of imported rice in the country.

Moreover, with the advent of globalization, Filipino farmers have to be competitive in terms of production cost, volume and quality of their produce. Farmers should be prepared with the effect of globalization and should be competitive. The key to reduce the price of agricultural commodities is to implement a sustained program to increase productivity.

Improving productivity means reducing production costs per unit volume, while increasing yield. For rice production, the most important components of productivity program are: (a) irrigation, (b) soil and nutrient management (c) technology on production and mechanization (d) infrastructure and services support system. Agricultural mechanization contributes to the intensification and diversification of agricultural production systems. This, in turn, can generate rural employment, reduce postproduction losses and increase the value of a product through processing and reduce cost of production. Thus, the application of agricultural machinery in field operations and technology transfer in agricultural extension are important considerations in improving the Philippine agriculture.

The introduction of farm machineries to cooperatives and farmers associations for their common use is the most cost-effective and sustainable solution to improving the rice mechanization. This is due to small landholdings of 1.29hectares per farm/holding (PSA 2012) and it is not practical for individual farmers to invest in machines which they will use for only a few days in the entire year. The recently approved RA 11203 is consistent with this premises that Rice Farm Machineries and Equipment shall be provided as grant in kind to eligible farmers associations, registered rice cooperatives (FCAs).

TIME FRAME: 2019-2024

PROGRAM FUNDS:

Funding shall be sourced from the Rice *Competitiveness Enhancement Fund* as stated in the RA 11203. The law states the creation of a Rice Competitiveness Enhancement Fund also referred to as the "Rice Fund".

The Rice Fund shall consist of an annual appropriation of Ten billion pesos (P10,000,000,000.00) for the next six (6) years. The fifty percent (50%) of the Rice Fund shall be released to and implemented by the Philippine Center for Postharvest Development and Mechanization (PHilMech) as grant in kind to eligible farmers associations, registered rice cooperatives and local government units (LGUs).

A P100 million pesos per year for the next six years is also allocated for the extension program for PHilMech. Funds are also allocated to ATI (Php100Million annually) and TESDA (Php700Million annually) to support the RCEF-Mechanization Component.

Fund requirements for the operation and implementation of the RCEF-Mechanization component shall be requested to the Department of Budget Management for funding.

SOURCE OF FUND: Rice Competitive Enhancement Fund/General Fund

IMPLEMENTING AGENCY: Department of Agriculture-PHilMech

COLLABORATING AGENCIES: DA-RFOs, LGUs, ATI and TESDA

COVERAGE AREA: The program shall cover the rice producing provinces and municipalities focusing and basing from the list of rice producing provinces as provided for by PhilRice as attachment of the Philippine Rice Industry Roadmap. The target per year and its distribution per provinces shall be prepared by the program implementers based on the rice production area, yield, production cost and machinery requirements or level of mechanization in consultation with RFOs, LGUs.

DURATION: The RCEF-Mechanization Component shall commence immediately after approval of the Implementing Rules and Regulations of RA 11203 and the Implementing Guidelines, subject to availability of funds. The program will be initially implemented in 6 years and at the end of the sixth (6th) year, a mandatory review shall be conducted by the Congressional Oversight Committee on Agricultural and Fisheries Modernization (COCAFm) to determine whether the

Rice Fund and its use as provided for under this RA 11203 shall be continued, amended, or terminated.

Section 2 PROGRAM OBJECTIVES

To raise rice farmers' productivity, profitability and global competitiveness thru strengthened access and use of appropriate production and postproduction mechanization technologies.

Specific Objectives:

1. To make accessible the appropriate rice production and postharvest machineries and equipment to the farmer cooperatives and associations (FCAs) and local government units (LGUs).
2. To promote among Filipino rice farmers the use of efficient and cost reducing rice mechanization interventions.
3. To strengthen local agricultural machinery manufacturing industry through aggressive technology development, fabrication and manufacturing.

Section 3 BENEFITS OF THE PROGRAM

The expected direct benefits of the mechanization and postharvest facility intervention specifically for the users and beneficiaries of the project areas can be derived from the following:

- a) Reduction of production cost of farmer-users by Php2-3 per kilogram using precise, effective and complete system of mechanized production technologies, and
- b) Reduction of postproduction losses of farmer-users by 3-5% using appropriate and efficient postproduction technologies.

Benefit Cost Analysis (Table 1) show favorable indicators, with Net Present Value (NPV) of Php 3.89 billion and Economic Rate of Return (ERR) of 15.41%. This only considers the two direct and immediate sources of benefits from the program; reduced costs and averted losses.

Table 1. Benefit cost analysis of mechanization and postharvest intervention.

Indicator	100% Utilization	10% Decrease in Utilization	10% Benefit Shortfall
Net Present Value	Php 3.89 billion	Php 939.13 million	Php 1.01 billion
ERR	15.41%	11.31%	11.42%

Other impacts of the program may include cost reduction in using several mechanization technologies for other crops such as corn, cassava and others. It should be noted that some facilities included in the program are crop neutral. Other potential quantifiable benefits are the prevented rice crop damages/losses due to weather risks such as tropical cyclones and prolonged rainy days. Machines such as combine harvester and mechanical dryer are found to be effective instruments in reducing the exposure of rice farmers to adverse weather. Moreover, other benefits detailed below, although not included in the analysis because of insufficient/not readily available data, may improve the overall economic viability of the program.

Other Program Benefits:

Boost local agricultural machinery manufacturing industry and employment. There are other far reaching effects of mechanization like the growth of local manufacturing industry and employment generation among skilled workers. This will be a big leap to agricultural industry and eventually to the Philippine economy as a whole.

Widespread adoption/use of agricultural mechanization technologies. The aggressive promotion of mechanization technologies is expected to create awareness on the benefits of the agricultural mechanization both from the manufacturing sector and the individual farmers nationwide.

Availability of locally designed mechanization technologies as a result of technology development. Appropriate and locally produced mechanization technologies will become available as a result of the technology development projects under this program.

Yield increment. Another benefit is on the yield increment as a result of good land preparation, efficient planting (correct placement and no missing hills), increase in population density per unit area.

Increase cropping intensity. The use of mechanization technologies will shorten the duration of doing farm activities. This will improve the cropping intensity and farmers can now have two or more cropping seasons per year.

Timeliness of operation and reduction of labor use. The timeliness of farm operation would no longer be a burden to the farmers as it can do farming activities on time and lot faster than the old practice. The use of mechanization and postharvest facilities will reduce use of labor and also make our farmers capable of adapting on the effect of climate change on rice farming.

Additional income can be generated from using the machineries and equipment. The FCAs are also expected to earn additional income from its operation.

Readily available services. Other benefits derived from the mechanization program are the effects of repair and machinery services, training of farmers and the provision of technical assistance.

Section 4

STATUS OF FARM MECHANIZATION AND OTHER RELATED DATA

Empirical studies and reports regarding the level of mechanization, ownership of mechanization technologies, postproduction losses, cost of production, and labor use in rice production are presented below. These data will be the basis in determining the appropriate technologies, strategic interventions and systems of adoption that will be used in the implementation of the program.

1) Level of Mechanization

The study conducted by PHilMech in 2013 shows that:

- a) Negligible level of mechanization in planting, weeding, spraying, and harvesting in some regions;
- b) Mechanical power is applied mostly in harvesting and land preparation;
- c) Manual transplanting is widely-used as method of planting;
- d) Threshing/Shelling and land preparation facility is widely-used;
- e) Sun drying is still preferred by farmers, probably due to the available solar power and high prices of mechanical dryers;
- f) Overall, human, animal and mechanical power input in the farm is low at 2.31hp/ha. This is one of the reasons behind low productivity and high postharvest losses.

2) Level of Agricultural Machinery Adoption

Table 2. Adopters of machine in selected ASEAN countries, 2013-2014

Activity	Thailand	Vietnam	Philippines	Indonesia
Combine Harvester	100	100	3	0
Axial Thresher	0	0	97	63
Four wheel tractor	55	76	-	-
Two-wheel tractor	44	24	98	96
Power Sprayer	1	0	1	-
Mechanical Transplanter	0*	0*	-	-

* Note: 100% of Thailand and Vietnam farmers have practiced direct seeding

Source of Data: PhilRice, 2016

- a) The table highlights the low adoption rate of Philippines for 4-wheel tractor, mechanical transplanter and combine harvester.
- b) The use of mechanical transplanter in Thailand and Vietnam is also low as they use the direct seeding technology.
- c) Philippines has high adoption on thresher and two-wheel tractor, this implies adoption of small machineries is prevalent in the country.

3) Ownership and Degree of Utilization of Agricultural Machineries and Facilities

- a. As reported by PHilMech, high investment cost appears to be a prime influence in the acquisition of farm equipment. There is high ownership among Filipino farmers for low-cost items such as plow, harrow, cultivator, hand tractor and threshers.
- b. In addition, most of the big dryers and rice mills are dominantly owned by private traders and processors while a small portion are owned by the farmers' cooperatives/associations through grant or soft loan from the government.

4) Grain Drying and Milling Situationer

- a) The study conducted by PHilMech in 2013, reveals that existing functional and efficient mechanical drying and rice milling systems are insufficient.
- b) This implies that the grains produced are not being dried with efficient means, rather it is being dried using inefficient system (i.e. highway drying, drying using old-inefficient dryers, and others) which usually have high drying losses.
- c) In addition, grains produced were not milled with quality rice mills hence high milling losses, low milling recovery and low head rice recovery.

5) Magnitude and Implication of Postharvest Losses

Table 3. Postharvest Losses

PH Operation	% Loss (Average)	% Share
Harvesting	2.03%	12
Piling	0.08%	0.5
Threshing	2.18%	13
Drying	5.86%	36
Milling	5.52%	34
Storage	0.8%	5
TOTAL	16.47%	100

Source: Postharvest Loss Assessment Project conducted by PHilMech and PhilRice, 2010

- a) In terms of postproduction loss, the most critical is drying operation with an average loss of 5.86%, representing 36% of the total loss. Next is the milling operation with an average loss of 5.52%, constituting 34% of the total loss. Milling and drying loss comprise 70% of the national average postharvest losses.
- b) High losses in drying and milling can be accounted to the use of inefficient drying and milling facilities.
- c) The use of highway for drying rice is widely practiced. Use of low milling recovery rice mills is also prevalent in the countryside.

6) Costs of Rice Production

Table 4. Comparative Cost of producing 1 kg of rice in selected ASEAN countries, 2013-2014, in Peso per kg.

Activity	Thailand	Vietnam	Philippines	Indonesia
Land Rent	1.89	1.49	2.11	6.61
Current Inputs	3.93	2.98	3.84	2.97
Machine and animal	1.67	0.78	1.77	0.51
Labor	1.30	1.02	4.53	5.32
Interest on Capital	0.07	0.08	0.43	0.32
Total Cost of Production	8.86	6.53	12.41	15.71

Source of Data: Bordey, PhilRice (2017)

- As reported by PhilRice, the costs of producing rough rice are P12.41, P8.86 and P6.53 per kilogram respectively for the Philippines, Thailand, and Vietnam. The high cost of production in the Philippines is basically due to high cost of labor at Php4.53/kg. This is around 36% of the total cost of producing 1 kg of rice.
- The high cost of labor is due to the low level of adoption of machineries for rice production.

7) Labor Use in Rice Production

Table 4. Total labor use in selected ASEAN countries, 2013-2014 in man-day per hectare

Activity	Thailand	Vietnam	Philippines	Indonesia
Land Preparation	1.8	2.4	8.8	14.7
Crop establishment	0.9	6.3	20.7	21.7
Crop Care and Maintenance	6.3	11.0	18.8	27.3
Harvesting and Threshing	0.7	1.2	18.3	25.6
Postharvest	0.0	1.1	2.0	6.9
Total Labor	9.7	21.9	68.7	96.2

Source of Data: Bordey, et al, PhilRice (2016)

- The Philippines has the 2nd highest labor use next to Indonesia. The labor use in the country is about 69man-day per hectare.
- Almost all the activities in rice production in the country register high labor use specifically on crop establishment, crop care and maintenance and harvesting and threshing.
- This only implies the low use of production machineries and postproduction facilities in the country.

Section 5

THE PHILIPPINE RICE VALUE CHAIN

The Philippine rice value chain (Figure 1) goes through a series of activities in the production of goods from raw materials to actual sale of milled rice as final product. It involves and links several key players at each stage of the process. The functions cover input provision and production, aggregation, processing, marketing and consumption. The value chain actors include the rice farmers, input and service providers, rice traders, millers and end consumers. Each player adds costs and profits to the original farm gate price of paddy, thus, increasing its price as the product moves along the value chain towards the final retailers. Hence, understanding this process is crucial in crafting policies and strategies to achieve a competitive rice industry (Mataia *et al.*, 2018).

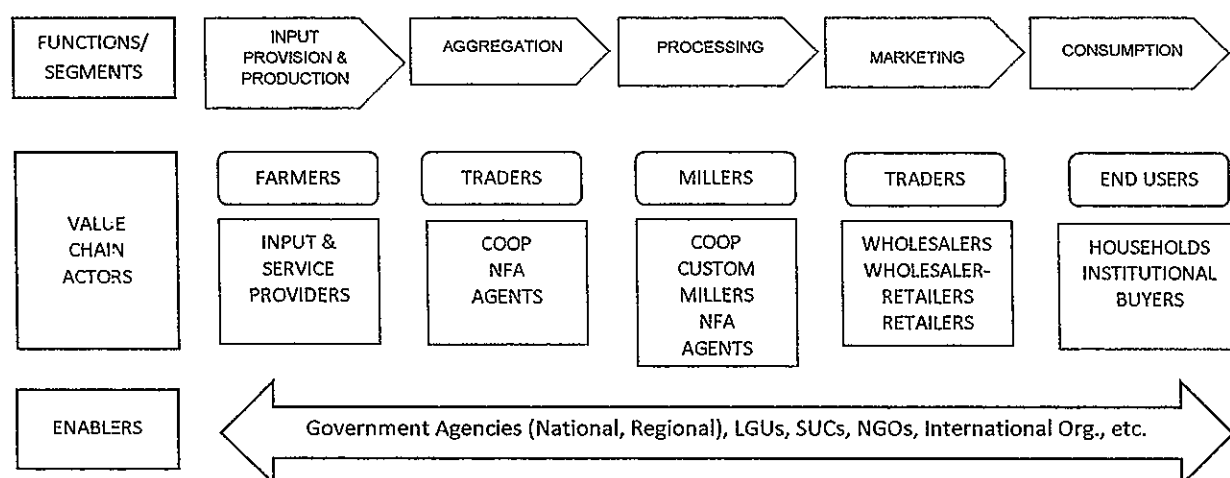


Figure 1. The Philippine Rice Value Chain (Mataia *et al.*, 2018)

Constraints hampering the rice value chain

Through value chain analysis, several constraints and threats affecting the performance of the key players are identified. These constraints highlighting the mechanization and postharvest concerns are summarized from different studies (Mataia *et al.*, 2018; PhilRice; PHilMech)

1. *High labor cost.* This is due to lack of mechanization technologies, poor adoption of existing technologies and dwindling farm labor supply in the rural areas. As of 2013, about 21% of rice farmers in the country still utilize man-animal power in land preparation (PHilMech, 2013). For planting, 76% of rice farmers practice transplanting while 24% adopt direct seeding. Studies show that direct seeding is more cost effective than transplanting (PhilRice). While mechanical transplanters are now used in some parts of the country such as Isabela, Nueva Ecija, Tarlac and Pangasinan, adoption is still low. However this is expected to gain momentum with the escalating cost of manual transplanting as driven by proliferation of combine harvesters. Some labor service providers displaced by combine harvesters demand additional compensation in the form of higher fee for transplanting. For harvesting operation, although high majority of farmers in major rice producing provinces are already using combine harvesters, larger number of farmers nationwide still use traditional manual harvesting and mechanical threshing.

2. *Huge postharvest losses.* Salvador (2012) reported that aggregate rice postproduction losses from harvesting to storage stand at 16.47%. Of this amount, drying loss accounted for 36% of the total loss while milling loss constituted 34%. Meanwhile, harvesting to threshing losses comprise 25.5% of the total postproduction losses. In addition, grain quantitative losses are incurred by rice farmers due to delays in postproduction activities as affected by inclement weather and inadequate facilities.
3. *Lack of postharvest facilities.* Insufficient modern mechanical drying, milling, and storage facilities have been one of the constraints identified in the existing rice value chain. Because of these constraints, most rice farmers dispose their produce in fresh form immediately after harvest/threshing. This limits the income opportunity of rice farmers by not doing value adding activities such as drying and/or milling. Other reason for inadequate postproduction technologies is the high investment costs and scale issue that require large volume in order to be financially viable.

Section 6 STRATEGIC INTERVENTION ON MECHANIZATION

Based from the status of mechanization and the value chain of rice, the major concerns of rice industry related to agricultural mechanization in the country are: low level of mechanization, low adoption of mechanization and postproduction facilities and high production costs due to high labor use in rice farming. This is consistent to the constraints identified in rice value chain, amongst are high labor cost, high postharvest losses and lack of postharvest facilities. With these situations, the most strategic intervention to address these rice production concerns, challenges and constraints in rice value chain is the introduction of mechanization and postproduction facilities to farmer associations, and cooperatives. The introduction of mechanization and postharvest facilities aimed to improve the rice value chain in particular and rice competitiveness in general, specifically:

1. Reduce postharvest losses in order to increase and sustain availability of quality rice supply. This includes provision of combine harvesters and mechanical dryers to curb high losses in manual harvesting, threshing and drying operations.
2. Reduce cost of production by promoting labor-saving, cost-reducing and climate-smart technologies and practices to lower per unit cost of production and consequently price of milled rice. This encompasses wider adoption of direct seeding technology, mechanical transplanters, four-wheel tractors, combine harvesters and power tillers for areas that still employ man-animal power.
3. Strengthen training and extension delivery services to accelerate delivery of appropriate and efficient mechanization and postharvest/processing technologies to farmers.
4. Reduce marketing costs through mechanization of processing and marketing facilities.

Farm machineries and postproduction facilities not only can reduce cost of labor, reduce production cost and reduce postproduction losses but also can improve timeliness of operations, raise quality of rice produce and value adding to rice.

Over the years the government has been promoting farm machineries to cooperatives and farmers associations for their common use. This is because very few farmers have the means to acquire tractors, mechanical transplanters, combines and dryers. Besides because of small landholdings of

1.29hectares per farm/holding (PSA 2012), it is not practical for individual farmers to invest in machines which they will use for only a few days in the entire year. The most cost-effective and sustainable solution to rice mechanization is group of farmers to become adopters of mechanization technologies. This is consistent to the provision of RA 11203 in Sec 13.15 that Rice Farm Machineries and Equipment shall be provided as grant in kind to eligible farmers associations, registered rice cooperatives (FCAs) and local government units (LGUs).

The FCAs shall offer services for the facilities that will be availed from the program like: land preparation, planting, harvesting, drying and milling as well as technical assistance, repair and maintenance. The technologies and services should address the problems on mechanization. The following selected technologies will be prioritized based on its impact on cost reduction, loss reduction and increasing income of Filipino farmers.

1. Precise and Effective Technologies for the Reduction of Production Cost
 - a. *Land preparation technologies.* Ensure the timeliness and correct land preparation of agricultural farms with the use of hand tractor and four wheel tractor equipped with appropriate implements.
 - b. *Crop establishment and care technologies.* Ensure population density and correct placement of seeds with the use of mechanical transplanter and precision seeder. Mechanical weeding and spraying technologies are also strategic investment in rice production.
2. Appropriate and Efficient Postproduction Technologies for the Reduction of Postproduction Losses and Maintaining Grain Quality
 - a. *Harvesting and threshing technologies.* Ensure the reduction of harvesting and threshing cost and losses with the use of rice combine harvester focusing the promotion on areas where the use of combine harvester is still low.
 - b. *Postharvest technologies.*
 - i. Minimize drying losses and address problems on drying of big volume wet grain brought by mechanized harvesting-threshing. The use of mechanical dryer will be promoted aggressively. Mechanical dryer can accommodate bigger volume and faster drying time. It can produce quality milled rice and higher milling recovery.
 - ii. Addressing the milling requirements of rural communities with the use of efficient milling machines/equipment for farmer traders/processors.

Section 7

CONCEPTUAL PARADIGM OF RCEF-MECHANIZATION COMPONENT

The ultimate goal of farm mechanization is to help increase the welfare of farm households and create positive dynamics and opportunities for economic growth in rural areas. The RCEF - Mechanization program can contribute in attaining this objective by increasing the efficiency of agricultural production and postproduction thus improving productivity, profitability and competitiveness, specifically reducing postproduction losses, increasing incomes and reducing production costs.

Pursuing Agricultural Mechanization in an isolated and one-off strategy has proven inappropriate. The Rice Tarrification Law emphasizes that agricultural mechanization should be rolled out to collective farmers together with broader and dynamic strategies that have been found to promote agricultural machinery development. FCAs should have direct and sustained access to agricultural mechanization interventions to facilitate positive change and experience full potential of agricultural machinery development. The following development strategies are to be conducted: a) education and promotion to rice farmers b) provision of farm machineries to FCAs, c) training on operations and management, d) institutional enterprise and sustainability, and e) benchmarking, monitoring and assessment. Figure 2 shows the key development strategies presented in a conceptual paradigm.

The expected output of the RCEF-Mechanization program is the empowered FCAs and rice farmers. This is manifested through the well informed, capacitated and well-trained farmers and also with better access of farmers to machineries and facilities. This is one way of addressing the socio-economic problems of farmers and farmer-organizations. Filipino farmers are experiencing high production cost and high postproduction losses that resulted to low agricultural productivity and poor competitiveness. The low purchasing ability on farm machineries and high poverty incidence is prevalent among farmers. This means that the capital investment needed for purchases such as machinery can often not be made, particularly when the size of the landholding is limited and fragmented. It is therefore important to promote machinery and facility pooling at community level, this will make sure that farm machineries and postproduction facilities are readily available for farmers use at reduced service fee and value added is expected to farm products.

Among the development interventions and components of the program include the following:

Provision of rice machineries and postharvest facilities to support agricultural production and postharvest activities. Our government needs to work on an overall development framework that creates a favourable environment for the operation of agricultural machineries and postharvest facilities in rice areas to be managed by the farmer cooperatives/associations. Provision of agricultural machineries and postharvest facilities to farmer organizations and cooperatives will lessen the cost of rice production, reduce postharvest losses, improve timeliness of production and facilitate increasing the yield. The major focus of mechanization and postharvest technology intervention should address the problems on high production cost and high postharvest losses.

Technical Education and Promotion. Agriculture in its present state appears to be unattractive to many young people, and they seem to be turning away from agriculture. Another problem that aggravates the unattractiveness of farming is the low profitability of farming and low income in farming. Continuous education, promotion and adoption of mechanization technologies will make the farming attractive and improve the profitability

by decreasing the cost of production. Continuous education and aggressive promotion of rice mechanization and postproduction technologies to all farmers nationwide should be done.

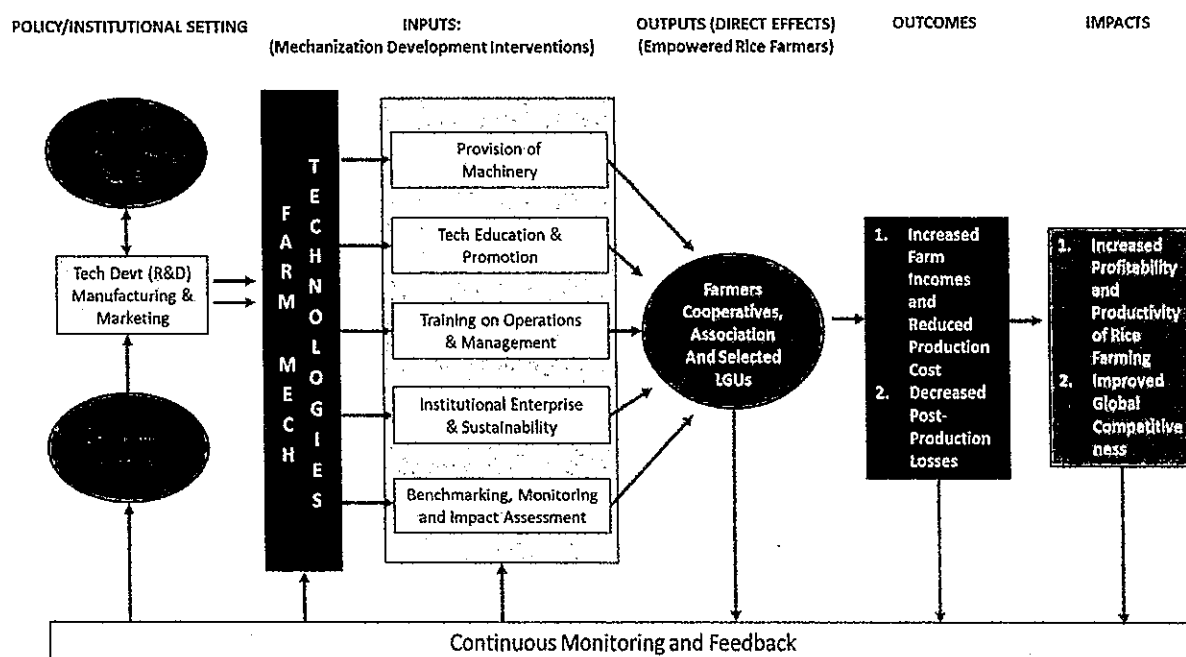


Figure 2. Conceptual Paradigm: RCEF Mechanization Component

Training on Operations and Management. Training is one of the most effective ways of developing capability of farmers and farmer-associations. Training is vital and important in ensuring machineries are used in a safe and correct manner, and operationalized and managed in sustainable way. The following are the capability development activities that will be undertaken.

- Training and capacity building schemes need to be strengthened at local level. This can be done in the form of regular farmer field schools and/or on model training farms where farmers can be familiarized with specific types of machinery.
- Advisory service schemes should be established on sustainable agricultural mechanization and related farming skills.
- Training courses to ensure correct operations of agricultural machineries and postharvest facilities as well as management concerns of farmer organizations.

Institutional & Enterprise Development and Sustainability. One of the major challenges in this program is ensuring that the agricultural machineries and postharvest facilities that will be provided to FCAs shall be fully utilized, and properly used. Another critical aspect is for the FCAs to have a continuous growth, development and sustained operation and management. These are the major concerns that should be addressed in the program implementation.

Benchmarking, Monitoring and Assessment. Gathering and analysing the baseline data on production, level of mechanization, cost of using machineries and other data will help

in understanding the mechanization and postharvest industry. Improving the performance of farm production requires a good understanding on technical aspects of farming. Profiling and benchmarking in farming involves gathering data about the best performing farms and comparing them with other farms. Benchmarking can show how higher levels of performance can be achieved. Many insights can be gained through a benchmarking exercise. It can uncover problems of production, management practices and other factors that affect productivity, cost of production and profitability.

Impact assessment will also be done by comparing level of productivity, reduction on total cost, and farmers' net income before and after the implementation of the program. Moreover, there will be integration of data gathered every year for monitoring purposes. These insights and discoveries can be used to improve overall farm performance and contribute to empowering of farmers, cooperatives, and associations.

The process starts by identifying farms and farmers that are performing well and are successful at what they do. It requires a thorough understanding of their farming practices in order to identify strengths and weaknesses and steps needed to improve performance. Profiling and benchmarking shall be done by the project implementers. Additionally, there will be monitoring and evaluation on cost and productivity every cropping season. Impact assessment will start on the second year of implementation and will be done annually until the end of the program by 2024.

On the other hand, current mechanization policy should support the following:

Empower Local Manufacturing industry. Creating enabling environment for agricultural machinery supply chain is the most necessary action to promote sound and intensified mechanization. The enabling environments include providing direct support to companies involved in machinery manufacturing, like promoting collaboration for provision of mechanization services.

Ensuring high quality machines in the market is critically important. Testing and evaluation of machinery and equipment are one of countermeasures to reduce or remove poor quality machinery from the market. It is important to have collaborative actions among government agencies and private sectors concerned on agricultural mechanization. The private sectors should take action on producing locally and quality machinery that is demanded by end users.

Agricultural machinery manufacturers are also expected to aggressively involve in the promotion, training, research and development, creating demand, synergistic associations, and participate in machinery testing programs; prioritize local assembly and manufacturing. Overall, it aims to attain a maximum competitive advantage of the manufacturing sector.

Technology Development. Technology development should be carried out in close cooperation with the private manufacturing sector to ensure that research and development is closely linked with the identification of markets and subsequent manufacture. Development, manufacturing and assembling of agricultural machineries and postharvest facilities locally will help improve the manufacturing sector and will ensure availability of appropriate technologies for the farming situations of Filipino farmers.

Section 8
LOGICAL FRAMEWORK

Table 6. RCEF-Mechanization Component 2019-2024

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Impact 1. Increased profitability and productivity of rice farming 2. Improved global competitiveness of rice farmers.	<ul style="list-style-type: none"> - Profit margin of rice production using mechanized farming increased by 5% starting 1/2021 and onwards - Production cost of locally produced rice comparable with imported rice (with 35% tariff) from ASEAN countries. 	<ul style="list-style-type: none"> - Sales and market price figures - Extension agent reports - Survey/data reports on import/export of rice trading - Results of Impact evaluation system 	Concerning long-term value of program/project: 1. Farmers protected from unscrupulous merchants 2. Sustained market for locally produced quality rice
Outcomes 1. Rice farmers who availed the services of Farm Machinery and Postharvest Facilities (FMPF) have reduced production cost and increased their income in rice farming 2. Decreased Postproduction Losses of PF users	<ul style="list-style-type: none"> - 85% of machinery/facility users have greater income at Php2,000.00-3,000.00 per hectare than the non-users. - 85% of machinery/facility users reduced cost of production by Php2-3 per kilogram of rice produced - 85% of machinery/facility users reduced their postproduction losses by 3% 	<ul style="list-style-type: none"> - Harvest records - Review and analysis - Survey of farmer- users and traders 	Affecting Outcome to Impact link: 1. Price of rice does not fall below the production cost plus 50% mark up 2. Market absorbs all the locally produced rice and there is no stop buying and influx (over supply) of imported rice in the market.
Outputs 1. Empowered Rice Farmers and FCAs <ul style="list-style-type: none"> • Farmer-recipients well informed, capacitated and well-trained and also with better access of machineries and facilities 	<ul style="list-style-type: none"> - 1,300FCAs technically capacitated and received machineries (turned over) for their use by 2/2020 <ul style="list-style-type: none"> - 1300 sets of FMPF turned-over by 2021 - 1300 sets of FMPF turned-over by 2022 - 1300 sets of FMPF turned-over by 2023 - 1300 sets of FMPF turned-over by 2024 - 1300 sets of FMPF turned-over by 2025 	<ul style="list-style-type: none"> - Directory of training participants, training report and utilization report of FMPF - List of Beneficiaries/ recipients - Project report on turn over 	Affecting Output to Outcome link: 1. Extension agents/ implementers properly supervise the use, management and operation of FMPF 2. Regularly use, properly maintained and correctly operated the FMPF 3. Members of recipient organizations willing to cooperate and use the FMPF

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Activities and Inputs <u>Benchmarking, Monitoring and Assessment</u> 1. Project Mobilization and Coordination with Regional Clusters 2. Field Survey: Primary Data Gathering <ul style="list-style-type: none"> - Pre-implementation - Post-implementation 3. Data Processing 4. Data Analysis 5. Write-up of Results	<ul style="list-style-type: none"> - Focus Group Discussion in 80 provinces every year from 2019-2024 - 100 Key Informant Interviews conducted in 16 regions every year from 2019-2024 - 1,300 FCAs Interview every year from 2019-2024 - 12,000 Farmers Interview every year from 2019-2024 - 60 Traders and Local Manufacturers Interview every year from 2019-2024 - 12,000 follow up interviews every cropping season by 2019-2024 - Comparison on level of productivity and income before and after intervention every year from 2019-2024 - Cost reduction before and after intervention every year from 2019-2024 	<ul style="list-style-type: none"> - Project reports/records - Project reports/records - FCAs and farmers profile - Cost and Return Analysis - Financial Analysis - FS Preparation 	Affecting input to Output link (for all the inputs and activities): 1. Collaborating Units (LGU and farmer associations) will provide full support in the conduct of project activities. 2. Availability and on-time release of funds

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Activities and Inputs <u>Technical Education and Promotion</u>			Affecting input to Output link (for all the inputs and activities):
1. Development of IEC Materials	<ul style="list-style-type: none"> - 3 Types of IEC materials developed and reproduced <ul style="list-style-type: none"> - Program materials (e.g. primer, leaflets, flyers, brochures, etc) - Training materials (manuals, training kit, etc) - Advocacy materials (briefers, website, social media, etc) 	<ul style="list-style-type: none"> - Printed and available IEC materials - Project report 	Same as above listed assumptions
2. Conduct Information Campaign	<ul style="list-style-type: none"> - 12 information campaign conducted by 9/2019 <ul style="list-style-type: none"> - 24batches- 9/2020 - 24batches- 9/2021 - 24batches- 9/2022 - 24batches- 9/2023 - 24batches- 9/2024 	-project report	
3. Conduct of advocacy /media relations	2 Media briefings 10 news/features in major dailies	-project report	
4. Conduct of exhibitions	<ul style="list-style-type: none"> - 3 technology exhibitions conducted 	-project report	
5. Conduct of Demonstration	<ul style="list-style-type: none"> - 34 technology demonstration conducted 	-project report	
6. Conduct of Conferences and Seminars on Agri machineries	<ul style="list-style-type: none"> - 34 Conference and Seminar Conducted 	-project report	

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Activities and Inputs <u>Provision of Agricultural Machineries and Postharvest Facilities</u> 1. Coordination Activities 2. Site Validation 3. Procurement 4. Delivery of machineries and equipment 5. Testing and Commissioning 6. Monitoring and Evaluation	- 16 regional offices coordinated - applicants passed the minimum criteria <ul style="list-style-type: none"> - 1300applicants - 6/2019 - 1300applicants- 4/2020 - 1300applicants- 4/2021 - 1300applicants- 4/2022 - 1300applicants- 4/2023 - 1300applicants- 4/2024 - delivered, tested and commissioned <ul style="list-style-type: none"> - 1300projects- 12/2019 - 1300 projects - 11/2020 - 1300 projects - 11/2020 - 1300 projects - 11/2021 - 1300 projects - 11/2022 - 1300 projects - 11/2023 - 1300 projects - 11/2024 - FCA recipients regularly monitored (twice a month) visited	- Validation forms - Delivery, Installation, testing and accomplishment reports - Project reports	Affecting input to Output link (for all the inputs and activities): 1. Farmers are willing to accept, use and manage/operate the project 2. Weather condition will permit the data gathering, validation, and installation and construction 3. Availability of samples during testing and evaluation 4. Land owners for the proposed sites are willing to donate and cooperate in the construction. 5. Collaborating Units (LGU and farmer associations) will provide full support in the conduct of project activities. 6. Can identify 1200 farmer beneficiaries willing and qualified to become FMPF beneficiaries per year 7. Bidders are available and willing to participate the bidding. 8. Machineries and equipment to be delivered by suppliers are readily available 9. Availability and on-time release of funds Manufacturers are cooperative in the technology development activities

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Activities and Inputs			
<u>Training on Operations and Management</u>			
<u>SPECIALISTS TRAINING:</u>			
1. Conduct of training/retooling on the Performance testing and Evaluation of Rice Machinery	@ 25 pax/batch 2 batches = 2019 1 batch = 2020 1 batch = 2021	- Training Reports - Data base of Trained participants	Same as above Specialists served as Resource Persons and provided technical assistance
2. Conduct of Skills Training and Resource Person Development on Operation and Maintenance of Rice Machinery	25 pax/batch @ 2 Levels 3 batches = 2019 2 batches = 2020 2 batches = 2021	- Training Reports Data Based of Available Subject Matter Specialist on Mechanization	
3. Conduct of Skills training and Resource Person Development on Drying and Milling Servicing	25pax/batch @ 2 Levels 2 batches = 2020 2 batches = 2021	- Do -	
4. Conduct of Skills Training & Resource Person Development training on repair, troubleshooting and Maintenance of Agri-Machineries and Facilities	25 pax/batch 2 batches = 2019 2 batches = 2020 2 batches = 2021	- Do -	
5. Conduct of Skills Training and Resource Person Development on the Management of Agri-Machinery pool	25 pax/batch @ 2 Levels 2 batches = 2019 1 batch = 2020 1 batch = 2021	- Do -	
<u>TRAINING OF TRAINERS/ MACHINE Operators/ Technician/Operation Managers:</u>			
1. Conduct of Training on the Operation and Maintenance of Rice Machinery	1300 FCAs x 2 operators /FCA @ 40/batch = 60 batches Year 1 = 60 batches Year 2 to 6 = 60 batches/year	- Training reports - List of Trained machine operators; available trainers	Machines properly operated and maintained
2. Conduct of Skills Training and Development on the Management of Agri-Machinery pool	1300 x 3 officers/FCA = 4,800 60 pax / batch= 60 batches Year 1 = 60 batches Year 2-6 = 60 batches	- Presence of Operational/Plan/ Policies and guidelines - Training reports - List of participants	Proper operation and management of services provided
3. Conduct of Skills Training & Development training on repair, trouble shooting and maintenance of agri-machineries and facilities	1300 FCAs x 3 technicians/mechanic /FCA @ 40/batch = 60 batches Year 1 = 60 batches Year 2-6 = 60 batches/year	- Training reports - List of Trained Technicians/mechanics	
4. Conduct of Training for Manufacturing Sector	Year 2-6 = 3 batches @ 25 pax/ batch		
5. Conduct of Skills training and Development on Drying and Milling Servicing	Year 2-6 = 20 batches/year		
6. Island Wide Tech Exhibit/Demo, Roadshow, Technical Seminar	Year 1 = 3 batches (LVM) Year 2-6 = 3 batches/year (LVM)		

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Activities and Inputs			
<u>Institutional, Enterprise and Sustainability</u>			
1. Conduct of training workshops on business planning	<ul style="list-style-type: none"> - Prepared 1,300 business plans by 12/2019 - 1200 business plans - 12/2020 - 1200 business plans - 12/2021 - 1200 business plans - 12/2022 - 1200 business plans - 12/2023 - 1200 business plans - 12/2024 	<ul style="list-style-type: none"> - Presence of business plans - Monitoring reports 	<p>Timely release of implementation budget</p> <p>Required manpower are hired and deployed on time.</p>
2. Development of Manual of Operation on Farm Machinery Service Provision and Rice Processing Enterprise	<ul style="list-style-type: none"> - Prepared/distributed - 400 manuals by 12/2020 - 400 manuals by -12/ 2021 - 400 manuals by -12/ 2022 	<ul style="list-style-type: none"> - Presence of manuals - Monitoring reports 	
3. Conduct of need-based learning sessions on organizational development, management and enterprise capability enhancement	<ul style="list-style-type: none"> - Enhanced capability of members of BOD and management staff of - 1300 FCAs by 12/2020 - 1300 FCAs by 12/2021 - 1300 FCAs by 12/2022 - 1300 FCAs by 12/2023 - 1300 FCAs by 12/2024 	<ul style="list-style-type: none"> - Activity Reports - Monitoring reports 	
4. Conduct of annual enterprise status assessment, sharing of experiences and planning workshops	<ul style="list-style-type: none"> - Determined annual status of FCA beneficiaries, and crafted their action plans - 1300 FCAs by 12/ 2020 - 1300 FCAs by 12/2021 - 1300 FCAs by 12/2022 - 1300 FCAs by 12/ 2023 - 1300 FCAs by / 2024 	<ul style="list-style-type: none"> - Activity Reports - Monitoring reports 	
5. Development of selected FCA beneficiaries into enterprise models on farm machinery service provision and rice processing enterprise	<p>Evaluated, selected and assisted 12 FCAs to become models on models on farm machinery service provision and rice processing enterprise by 12/2021</p>	<ul style="list-style-type: none"> - Activity Reports - Monitoring reports 	

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Activities and Inputs <u>Technology Development and Support to Local Manufacturing</u> 1. Conduct of training course for good manufacturing practice	- 4 training on GMP conducted <ul style="list-style-type: none"> - 4 training -12/ 2020 - 4 training - 12/2021 - 4 training - 12/2022 - 4 training -12/ 2023 - 4 training -12/ 2024 	<ul style="list-style-type: none"> - Project reports - Training reports - Presence of prototype of newly developed technologies - Project document and linkage to credit reports 	<ul style="list-style-type: none"> - Local manufacturers are actively supporting the program
2. Development of agricultural machineries	- 2 technologies developed by 12/2020 <ul style="list-style-type: none"> - 2 technologies developed 2021 - 1 technology developed by 2022 		
3. Facilitate linkage to credit	- 3 manufacturers linked to credit by 12/2020 <ul style="list-style-type: none"> - 3 by 2021 - 3 by 2022 - 1 by 2023 		

Section 9

AGRICULTURAL MACHINERIES AND POSTHARVEST FACILITY TARGETS

To provide a significant impact on reducing the cost of production and reducing postproduction losses, the following technologies are to be distributed in rice producing provinces/municipalities of the country. There will be 1300-1600 total FCAs as recipients for the first year of implementation. Succeeding years will have another 600-1,300 FCA-recipients yearly.

Table 7. List of technologies that can be acquired from the program for the 6-year implementation.

Technology	Machinery/Facility Type
Focus/Based Technologies	
a) Mechanical Drying Technology	Mechanical Dryer
b) Land Preparation Technology	Four Wheel Tractor Hand Tractor Floating Tiller
Add-On/Stand Alone Technology	
a) Crop Care and Establishment Technology	Precision Seeder Mechanical Transplanter Mechanical Weeder
b) Harvesting and Threshing Technology	Combine Harvester Thresher Reaper
c) Milling Technologies	Rice Mill

Targets and Budget Requirements

The following are the targets and budgetary requirements of the program for the period of 2019-2024.

Table 8. Target and Fund Requirements

Targets	No of FCAs (Year 1)	Amount (Year 1)	No of FCAs (Year 1 to Year 6)	Amount (Year 1 to Year 6)
TOTAL		5,289,427,368		31,493,321,465
Facility Distribution	1,300-1,600	5,000,000,000	5,000-9,000	30,000,000,000
a. Provision of Farm Machineries and Postharvest Facilities	1,300-1,600	5,000,000,000	5,000-9,000	30,000,000,000
Extension Support, Education and Training Services (ESETS)		100,000,000		695,087,480
a. Tech Education and Promotion		23,000,000		138,000,000
b. Technical Capability Enhancement on Rice Mechanization		64,000,000		412,714,480
c. Institutional Enterprise and Sustainability		13,000,000		144,373,000
Program Implementation		189,427,368		798,233,985
a. Program Management/Admin Cost		166,524,400		601,552,656
b. Benchmarking, Monitoring, Assessment		15,339,736		151,301,936
c. Technology Devt and Manufacturing		7,563,232		45,379,393

Section 10 GENERAL IMPLEMENTING GUIDELINES

1. Program Management

- a. Management and organizational structure of implementation, manpower complements.
 1. A Program Management Office (PMO) shall be created to plan, manage and implement the program (Figure 3).
 2. The PHilMech-MANCOM shall serve as the advisory board of the Program Management Office.
 3. A Technical and Administrative Support Group shall be created composed of the Senior Staff to provide support in the implementation of the project.
 4. A Secretariat and Monitoring Team shall be organized composed of technical and support staff.
 5. The country will be divided into six clusters to implement the project. Clusters will be headed by a senior PHilMech staff. They will be assigned as Cluster Coordinators. Each cluster shall compose of regional teams that will be organized composed of at least 6-8 staff (Figure 4).

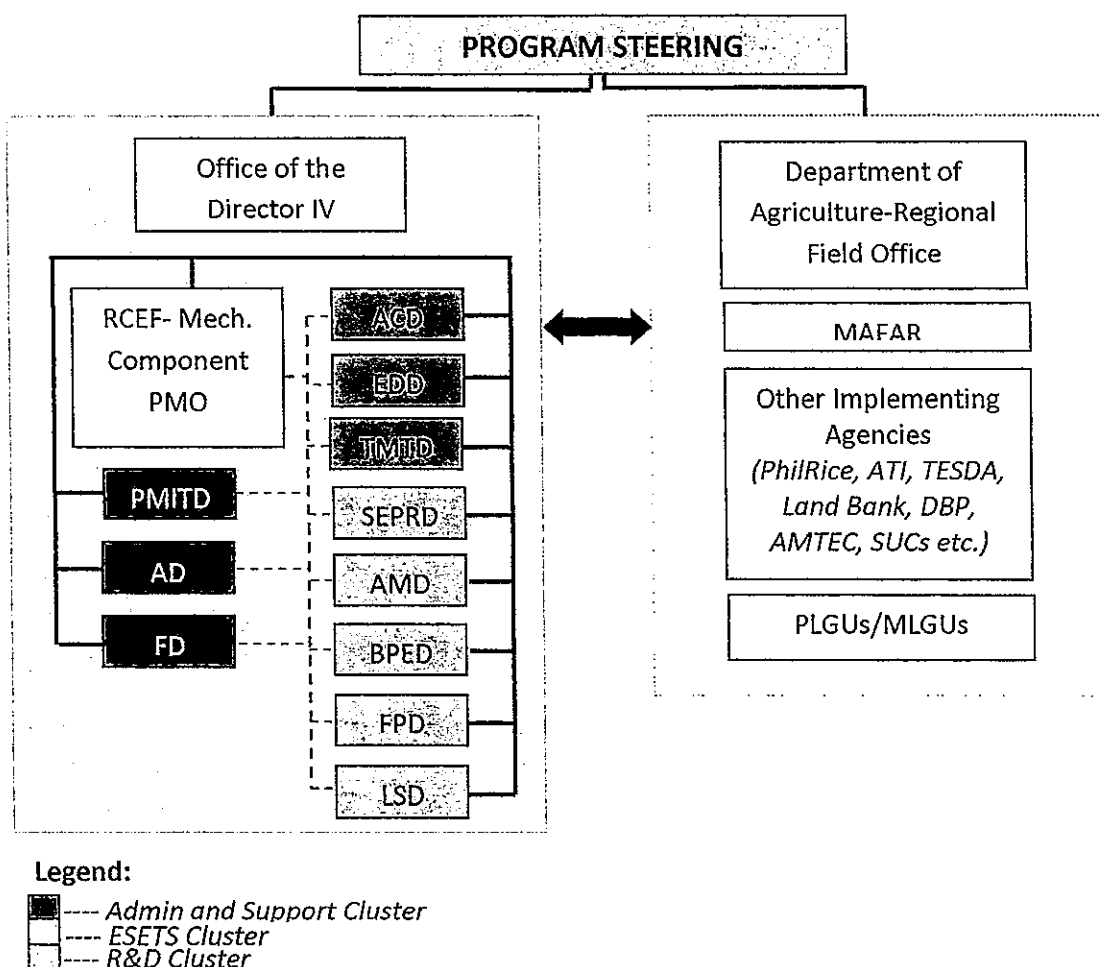


Figure 3. Functional Organizational Structure- RCEF Mechanization Component

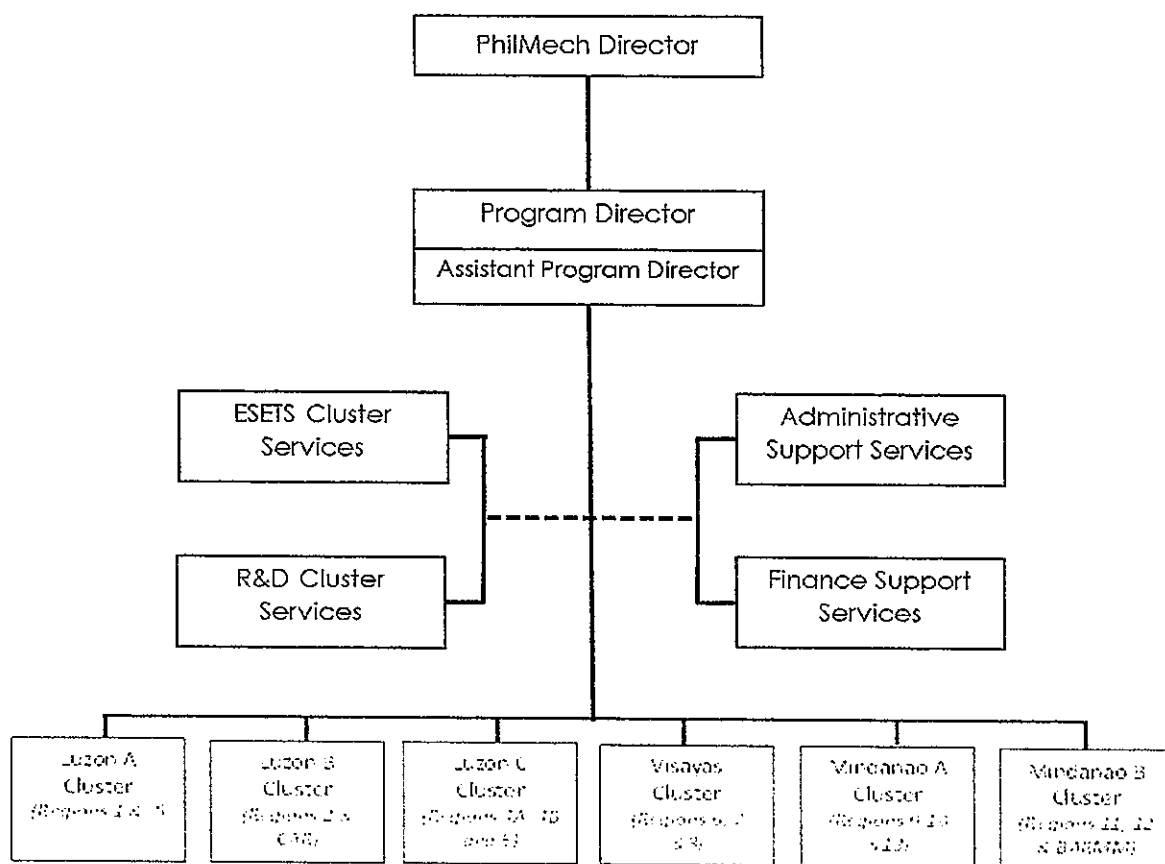


Figure 4. Operational Structure of RCEF-Mechanization Component

2. Procurement System

a. Procuring agency

1. PHilMech shall conduct the procurement of all the facility requirements of the program in accordance to procurement law (RA 9184).

b. Preparation of plans and specifications and estimates

1. Preparation of plans, estimates and specifications – specifications, design and plans of the infrastructure shall be prepared by the program implementers.
2. Designs, plans and specifications will be signed and sealed by a license agricultural engineers in compliance to agricultural and bio-systems engineering law, DA memorandum on agricultural facility procurement and the COA circular.

c. Bidding requirements for suppliers and contractors.

1. The procuring unit shall prepare the requirements in accordance to the procurement law and other DA memorandum circulars related to the procurement of agricultural mechanization facilities.

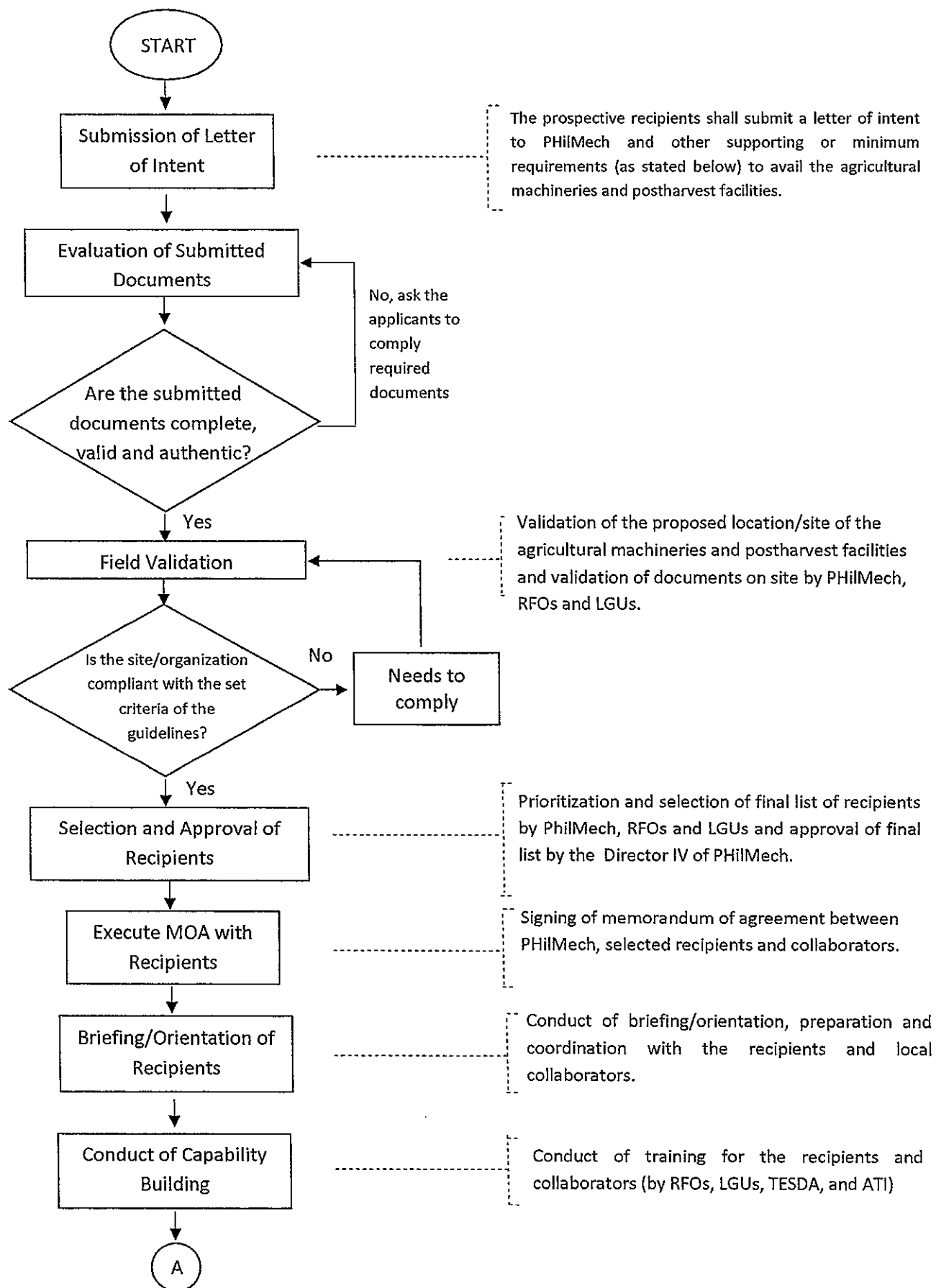
3. Distribution system

a. Activities of implementation (Figure 5) are as follows:

1. Submission of letter of intent. The prospective recipients shall submit a letter of intent and other supporting or minimum requirements (as stated

below) to avail the agricultural machineries and postharvest facilities. Letter of intent with corresponding attachment shall be submitted to PHilMech.

2. Evaluation of submitted documents – evaluation of documents as to completeness, validity and authenticity will be done by PHilMech, RFOs, and LGUs.
3. Field Validation - validation of the proposed site of the center and validation of documents on site shall be done by PHilMech, RFOs and LGU concerned.
4. Selection and approval of recipients – prioritization and selection of final list of recipients by PHilMech, RFOs and LGUs and approval of final list by the Director IV of PHilMech.
5. Execute MOA with recipients and collaborators – signing of memorandum of agreement between PHilMech, selected recipients and collaborators.
6. Briefing/orientation - Conduct of briefing/orientation and coordination with the recipients and local collaborators.
7. Conduct of Capability building – conduct of training for the recipients and collaborators
8. Delivery, construction and installation
9. Testing and evaluation
10. Inspection, Acceptance and Documentation
11. Turn over
12. Operation and Maintenance
13. Monitoring



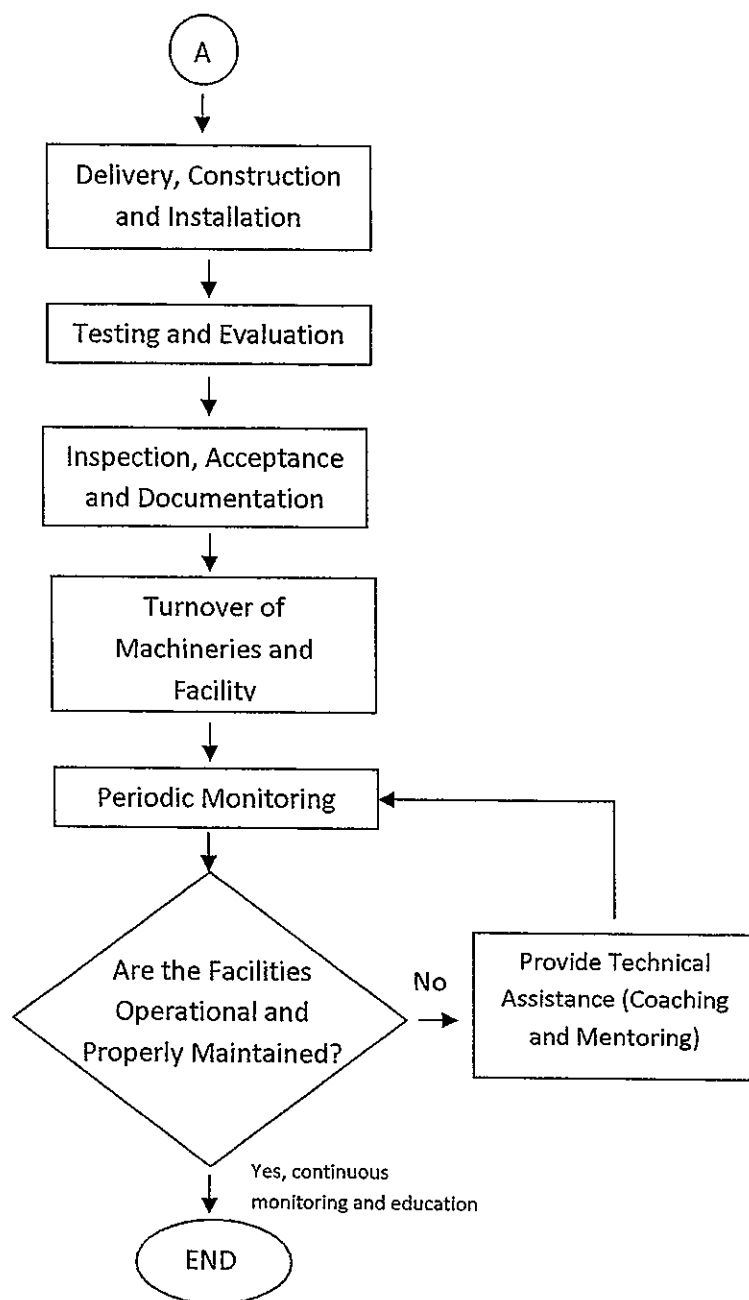


Figure 5. Flow of Implementation

b. Criteria for the selection of recipients

1. Recipients should be a rice-based farmers associations, registered rice cooperatives and local government units.

- a) The beneficiaries of the Rice Fund shall be those rice cooperatives and associations accredited by the DA.
- b) The program shall give priority to eligible rice farmers associations and registered rice cooperatives over LGUs.

2. Technical requirements for the cooperative or association to qualify as beneficiary.

- a) Should have at least 50 ha rice farm of regular members.
- b) Must have a minimum rice area of 100 ha within the peripheral barangays from the proposed location of the agricultural machineries and postharvest facilities.
- c) Must have the capacity to operate and maintain the machinery and equipment and willing to undergo training course/s.
- d) Must be willing to provide machinery shed as counterpart for the project.
- e) Should be willing to operate the project according to the prescribed model.
 - i. Follow the recommended suggested service fee (SFF).
 - ii. Operate and manage the project using an integrated and systems approach of farm machinery and equipment operation and management.
 - iii. Should be willing to undergo capability building activities of the following:
 - i. Operator/Manager – management, leadership and supervision of project
 - ii. Machine Operator – proper operation and maintenance of agricultural machineries.
 - iii. Mechanic – repair, trouble shooting and maintenance of the agricultural machineries and equipment.
 - iv. Cooperative/association officers/staff – operation, book keeping, basic accounting system, operational planning and management.
 - iv. Should conform to the set objectives and functions of the project.

3. Minimum Requirements for the cooperatives or associations to submit:

- i. Letter of intent and resolution from the farmer organization stating the need for the farm machineries and postharvest facilities and willingness to provide shed for the project as counterpart.
- ii. Certificate of accreditation from the DA.
- iii. Farmer Association/Cooperative Profiles
 - i. List of farmer members with corresponding rice farm area.
 - ii. Machineries present and other information related to the coop's operation.

- c. Technical requirements for the LGUs to qualify as recipient.
 - 1.The barangay where the project will be located should have a minimum rice area of 100 ha including its peripheral barangays.
 - 2.Must have the capacity to operate and maintain the machinery and equipment and willing to undergo training course/s.
 - 3.Must be willing to provide machinery shed as counterpart for the project.
 - 4.Should be willing to operate the project according to the prescribed model.
 - a) Follow the recommended suggested service fee (SFF).
 - b) Operate and manage the project using an integrated and systems approach of farm machinery and equipment operation and management.
 - c) Should be willing to undergo capability building activities of the following:
 - i. Operator/Manager – management, leadership and supervision of project.
 - ii. Machine Operator – proper operation and maintenance of agricultural machineries.
 - iii. Mechanic – repair, trouble shooting and maintenance of the agricultural machineries and equipment.
 - iv. Project staff – operation, book keeping, basic accounting system, operational planning and management.
 - 5. Should conform to the set objectives and functions of the project.
- d. Minimum Requirements for LGUs to submit:
 - 1.Letter of intent and resolution from the LGU Council.
 - 2.Provincial/Municipal/City/Barangay Council Resolution of LGU owned shed for the project.
 - 3.Rice Production Profiles
 - a) List of rice farmers with corresponding rice farm area within the barangay where the project will be located.
 - b) List of machineries present in the municipality/barangay where it will be located.
- e. Target and Prioritization
 - 1.Technology Target Setting. Target setting will be done to identify the technology requirements, number of units to be distributed and number of FCA-recipients.
 - a) To realize the benefits of the program, out of the 5Billion budget allocated to RCEF-Mechanization Component, there will be around 1,200-1,600 FCA-recipients for the first year.
 - b) Succeeding years of implementation will consider another batch of FCAs. The program will also consider “providing additional requirements of previous FCA-recipients” depending on their initial performance in terms of operation, management, maintenance and utilization of the machineries and equipment they have availed from the RCEF-Mechanization program and other mechanization programs of the government.
 - c) The technology target setting under this program will follow the concept of modernization development process that development “undergoes several stages from simple to a more advance use of

technology”. In the Philippines, the use of land preparation technologies were recognized as the basic technology requirement of rice farmers, and a more advance development in mechanization is the use of crop establishment (like precision seeder and mechanical transplanter), combine harvesting & threshing, mechanical drying and high-end milling technologies. Land preparation as one of the most laborious and critical processes of rice production will be one of the focus technologies that will be provided. A well prepared rice paddy as manifested by a well leveled, well puddled and well decomposed farm waste coupled with timely land preparation will generally prepare a good crop establishment, better water, weed and nutrient management that will result to good yield.

- d) Another consideration is based from the Eisenhower’s principle on “urgency of need and degree of importance”. Mechanical drying is recognized as one of the most needed technology due to urgency of drying the high moisture of harvested grains and high volume of drying requirements as a result of using the combine harvesters. This is aggravated by the unpredictable weather condition brought by climate change during harvest season. On the other hand, despite the presence of high drying requirements of farmers and FCAs, the adoption and investment on mechanical dryer is still low due to low financial performance. However, it is recognized that mechanical dryers can have several economic benefits like: increase market value of the paddy, secure income from minimizing weather risk and increasing income from being able to process more grain in a given time.
 - e) Overall, the program will consider the “need based system”. This is to ensure that the preferred and appropriate technologies will be provided to FCAs, and machinery gaps and requirements will be addressed. This will be done through a technical needs assessment and field validation of the specific technology requirements of the FCAs.
 - f) The farm machineries that will be provided by the program are presented in Table 6.
2. Prioritization. There will be two levels of priority setting. The first level is identifying the priority provinces and municipalities and second is identifying the FCA-recipients for the next six-year of program implementation.
- a) Provincial and Municipal Level
 - i. The program shall cover the rice producing provinces and municipalities focusing and basing from the list of rice producing provinces as provided for by PHilRice as attachment of the Philippine Rice Industry Roadmap.
 - ii. Machinery allotment and distribution will be based from the initial analysis of machinery/facility gaps and requirements made by PHilMech. This will be validated at municipal and recipient level.
 - b) Farmer Cooperative and Associations Level

- i. FCAs with high rice machinery gaps or requirements will be given priority.
 - ii. Another considerations are:
 - i. financial availability for initial revolving fund or operating cost, and
 - ii. organizational readiness to provide personnel to operate and manage the machinery that will be provided.
- f. Needs assessment and screening
 - 1. Assessment of mechanization needs and requirements for the FCAs and municipalities will be done by PHilMech in collaboration with RFOs and LGUs.
 - 2. Selection of recipients from the list of proposed recipients/applicants
 - a) Evaluation of submitted documents. Checking the completeness and authenticity of the documents.
 - b) Field evaluation. Field verification of the documents submitted and inspection of the site of the project to be located and validation of profiles and readiness of the organization to operate and manage the technologies.
 - c) Shortlisting and prioritization. Level of farm mechanization, machinery gaps and FCA readiness in terms of financial and organizational aspects are the determinants in shortlisting and prioritization.
 - 3. Approval of the list of final recipients by the Director IV of PHilMech.
- g. MOA Signing with the recipients
 - 1. A MOA shall be signed between PHilMech and the recipients of the project.
 - 2. The MOA shall specify the roles of the recipients in the operation and management of the project. Amongst the provisions are:
 - a) Operate and manage the project according to its purpose and objectives,
 - b) For the recipients to ensure the recovery scheme of the project and formulation of operational plan,
 - c) Regularly submit status report of the project, and
 - d) Right of DA to repossess the farm machinery and equipment from the farmer organization when found not using the agricultural machineries and postharvest facilities according to its purpose and objectives or not being utilized.
- h. Delivery and Installation
 - 1. Delivery – all the machineries and equipment should be delivered on site by the supplier/s.
 - 2. Installation – facilities and equipment needed to install shall be done by the supplier.
 - 3. Documentation and reports – a delivery report to be signed by the LGU representative preferably the Agricultural and Bio-systems Engineer of LGU or MAO, or RFO/PHilMech representative or the chair or

representative officer of the association/cooperative. Delivery report should be submitted to the PMO-Secretariat.

i. Trial Run, Testing and Evaluation

1. Trial Run – after the delivery and/or installation, a trial run should be done to all the farm machineries and postharvest facilities/equipment to be distributed or already delivered. The trial run shall be done by the manufacturer/supplier in the presence of PHilMech representative or RFOs or LGU and the recipient organization. A report should be submitted to the secretariat and should be duly signed by RFO or PHilMech or LGU representative, supplier and beneficiary representative/s.
2. Testing and Evaluation – confirmatory performance testing and evaluation shall be done to purposively and randomly selected machineries and facilities by PHilMech in partnership with collaborating agencies. The performance testing and evaluation of selected farm machineries shall be done by PHilMech in partnership with collaborators. The testing shall be done to verify and confirm the compliance of machinery and equipment according to specifications as set by the program implementers. A report should be provided duly signed and with recommendation if it passed the standard and specifications set by PHilMech.
 - a) PHilMech may also tap the AMTEC/BAFE accredited Test Engineers to support/assist in the testing and evaluation of farm machineries and facilities. Selected agricultural engineers from LGUs, RFOs, SUCs and PSABE may also be mobilized to assist in the testing and evaluation activities.
3. Documentation and reports – Pictures of the technology, major components with the presence of the collaborators and recipients.

j. Inspection and Acceptance

1. Technical Inspection of agricultural machineries, facilities and equipment shall be inspected and a technical inspection report should be submitted to the PMO-Mechanization Component duly signed by the PHilMech representative assigned in the area.
 - a) Technical inspection shall be done for all the machineries, facilities and equipment delivered to recipients by authorized PHilMech inspector.
 - b) The technical inspection report shall be one of the bases for the payment of the machineries and facilities.
2. Accountability receipt/acceptance – an accountability receipt shall be signed by the chairman or representative of the association.

k. Documentation

1. Signage and Marking

- a) Project Signage - A billboard stating the program should be placed at the project site to identify details of the project.
- b) Machinery/Facility/Equipment Markings - Marking for each machinery and equipment shall also be made for identification.

2. Pictures and reports – a turn over report, pictures, geo-tagged photos of facilities and corresponding marking/coding should be submitted to the secretariat.
 3. A certificate of donation should be prepared and turn over to the beneficiaries.
1. Turn Over, Commissioning, Capability Building and Institutional Development
 - a. Turn over documents.
 1. A turn over report and pictures should be submitted to the PMO-Mechanization Component. A certificate or deed of donation should be prepared and be given to the beneficiaries.
 - b. Conduct of information dissemination, training and capability building
 - i. Training on agricultural machineries and postharvest facility operation and management for managers and staff – technical and operational management training shall be conducted by PHilMech in collaboration with suppliers and other collaborating agencies.
 - ii. Training for subject matter specialist, field/test engineers, field staff implementers, operators, and workers – machinery and equipment operation and maintenance and other skills or specialized training shall be conducted to be spearheaded by PHilMech in collaboration with suppliers and other collaborating agencies.
 - iii. Training for technicians/technologists, mechanics, fabricators and manufacturing workers and supervisors– technical skills for technician and repair and maintenance for mechanics, manufacturing/fabrication machinery operators/workers and other related training shall be conducted by PHilMech in collaboration with TESDA, suppliers and other collaborating agencies.
 - iv. Information, Education Communication materials and information campaign/dissemination requirements, training and other capability/institutional development for farmers/FOs, RFOs, LGUs, SUC, and other intermediaries shall be undertaken by PHilMech in collaboration with the ATI and other collaborating agencies.
 - m. Repossession of the farm machinery and equipment.
 1. The program implementer reserves the right to repossess the farm machinery and equipment from the farmer organization when found not using the agricultural machineries and postharvest facilities according to its purpose and objectives or not being utilized.
 2. The repossessed farm machineries, facilities and equipment shall be transferred to other qualified recipients.
 3. This provision shall be part of the Memorandum of Agreement that will be signed between PHilMech and the recipients.

4. Operation and Management of the Project

- a. Operation of the project

1. Staffing and organizing –the farmer organization/beneficiary should ensure the presence personnel requirements of the project like operators, manager, mechanic and other staff.
2. Systems approach of operation and management – the ultimate goal for the operation and management is for the FCA to progressively adapt the integrated and systems approach of farm machinery and equipment operation and management (Figure 6). The progressive FCAs shall eventually provide the following services: a) Provide technical services for the good practices and technologies on rice production and processing among rice farmers and agricultural technologists, b) Provide education, technical capability building, training in maintenance and proper use of agricultural machineries and equipment for farmers, c) Provide custom services for farm mechanization technologies, and d) Conduct repair and troubleshooting services of agricultural machinery and equipment.

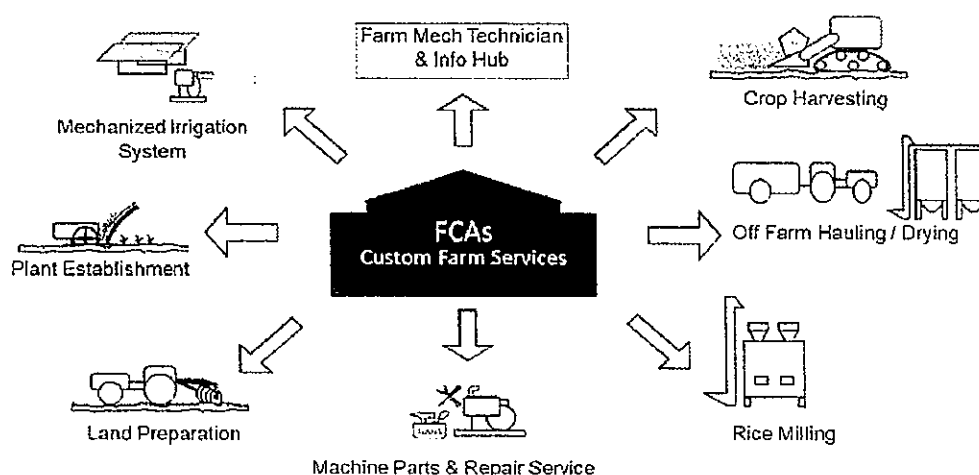


Figure 6. Technology operation and management

b. Management of the agricultural machineries and postharvest facilities

1. There should be a trained manager to ensure the day-to-day operation of the project. Training for the managers shall be provided by PHilMech, RFOs and LGUs.

c. Operational Plan

1. An operational plan should be prepared by the beneficiaries with the assistance of PHilMech, RFOs and LGUs.

d. Financial Analysis and Operational Manual

1. A financial analysis of the agricultural machineries and postharvest facilities shall be prepared by the FCA with the assistance of PHilMech, RFOs and LGUs.

2. An operational manual shall be prepared by the FCA with assistance of PHilMech, RFOs and LGUs, as reference in the day-to-day operation and management of the project.

5. Reporting and Monitoring system

- A. Submission of status report of implementation of the program
 - i. A weekly report on the implementation should be submitted to the PMO with proper documentation.
 - ii. Monitoring report shall be submitted by the Field teams to the PMO.
 - iii. Monitoring information system shall be established by the PMO for physical and financial accomplishments.
- B. Utilization and Status report
 - i. Regular submission of utilization and status report
 - ii. Data collection and analysis of the reports
 - iii. Annual assessment meetings for the beneficiaries shall be conducted.

OTHER MAJOR PROGRAM ACTIVITIES

The following activities are to be undertaken to ensure sustainability of the program.

1. **Technology Development programs that will enhance resiliency of the rice industry** by:
 - a. Conduct of technology development (TD) and information generation:
 - i. Technology Development
 1. Technology generation/verification and technology adaptation shall be adopted as an approach in the development of agricultural machineries, equipment and implements.
 2. Development of technology models and systems for agricultural machinery management and operation.
 3. Strengthening the prototype production, technical and manufacturing capability of PHilMech.
 - ii. Information and Database Generation and Benchmarking
 1. A benchmark study shall be conducted to establish the current situations and information -- inventory, technology use and costing.
 2. Support data generation for agricultural machinery and engineering resource network.
2. **Technology promotion, capability building and institutional development.**
 - Social Marketing Strategy. Conduct of technology promotion, social marketing and development and distribution of IEC materials.
 - General Information Campaign. Information dissemination on the agri-machineries and technologies among farmers and other stakeholders through exhibitions and demonstrations focusing on the *benefits and advantages*.

- Organizational Development and Capability Building. Cooperators-beneficiaries shall be trained in entrepreneurship and organizational management to ensure the continuous operation of the program. The conduct of capability building activities and development that will be conducted are as follows:

- Operation of farm machineries
- Repair and Maintenance of farm machineries and facilities, and
- Technical capability building for the operation, management and enterprise systems.

Capability building project for the operation, management and sustainability of the project shall be conducted. The following capability building activities shall be conducted:

- Operator/Manager – management, leadership and supervision of project
- Machine Operator – proper operation and maintenance of agricultural machineries.
- Technician/Technologist – technical knowledge and skills development, technology management and extension.
- Mechanic – repair, trouble shooting and maintenance of the agricultural machineries and equipment.
- Cooperative/association officers/staff – operation, book keeping, basic accounting system, operational planning and management.

3. Support the local manufacturing industry and locally manufactured technologies.

- a. Support local industry development and promotion of locally developed technologies (i.e. promotion of locally manufactured/produced machineries).
- b. Enhance the capability of local machinery sector with respect to local manufacturing and assembly.
- c. Encourage joint venture in development, assembly and manufacture of agricultural machineries.
- d. Assist and link manufacturing sector to credit.
- e. Facilitate the establishment of testing and evaluation center at different regions to support testing requirements of local manufacturers and suppliers.

4. Support activities to be undertaken to ensure sustainability by the program implementers in collaboration with FCAs, suppliers, manufacturers and other implementing agencies.

- i. Ensure the provision of Technical Assistance by creating mechanism on:
 - 1. Coaching and Mentoring System
 - 2. Organize Quick Response Team
 - 3. Continuing education and skills development among officers and members
 - 4. Technical Working Group – support group for the operation and management.
- ii. Facilitate Support from Manufacturers and Suppliers
 - 1. Deployment of Technician/mechanics on site
 - 2. Readily available spare parts

iii. Facilitate Organizational strengthening and empowerment – ensure presence/establishment of:

1. Professional /trained manager for each project
2. Technical and financial management should be ensured
3. Technician/technologist and mechanic
4. Support of LGU for the project
5. Policies, guidelines and systems will be prepared for the project
6. Operational manual and plan for the operation and management
7. Experience sharing system and institutionalizing regular review of FCAs
8. Award/Reward System for the project.

5. **Evaluation of the Program.** There will be three types of evaluation that will be done to measure the program output, effect and impact as well as machinery performance. These are:

- a) Summative evaluation. At the end of the project implementation a summative evaluation shall be conducted to know what happened with the program implementation in terms of physical and financial accomplishments.
- b) Technical Evaluation – an evaluation to ensure the technical aspect of the program. Ensuring that machineries and equipment delivered to recipients are according to specifications and standards.
- c) Effect and Impact Evaluation. Results based assessment like effects and impacts evaluation of the RCEF-Mechanization Program.

Section 11

INSTITUTIONAL ROLES

A. Involved Government Agencies and Roles

PHilMech – shall be the implementing agency of the program specifically with respect to promotion, planning, coordination, implementation, monitoring, evaluation, capability and institutional development and program management.

DA-RFOs - shall act as co-implementer in the implementation at regional level. RFOs will conduct the promotion, identification of recipients, validation of site and FCAs; assist in the delivery and commissioning and in ensuring the sustainable use of the farm machineries and equipment.

MLGUs/PLGUs - shall assist in the promotion, identification of sites, validation of site and FCAs; assist in the delivery and commissioning and in ensuring the sustainable use of the farm machineries and equipment.

ATI – shall prepare Information, Education Communication materials and information campaign/dissemination requirements, conduct training and other capability building for farmers (not necessary the recipients), RFOs, LGUs, SUC, and other intermediaries.

TESDA – shall conduct training for technician, mechanics, supervisors, fabricators and manufacturing workers– technical skills for technician and repair and maintenance for mechanics, manufacturing/fabrication machinery operators/workers and other related training.

BAFE – shall assist in the testing and evaluation, monitoring, and conduct of capability building of recipients.

- B. Program Steering Committee** - shall oversee and provide policy directions on the integrated implementation of the program in accordance with the Philippine Rice Industry Roadmap. The PSC shall be chaired by the Secretary of Agriculture, and co-chaired by the Secretary of Socioeconomic Planning with heads of implementing agencies. The PSC shall be supported by the DA– Field Operations Service (DA-FOS) as its Secretariat. The Secretary of Agriculture through the Undersecretary for Operations shall coordinate joint planning and integrated implementation of the programs under the Act and the Rice Industry Roadmap including the mobilization of DA Regional Field Offices (DA-RFOs), National Irrigation Administration (NIA), National Food Authority (NFA), concerned LGUs and other entities.
- C. PHilMech-Program Management Office** – shall ensure the effective implementation of RCEP- Mechanization Component. Specifically to spearhead the program management, planning, implementation, and monitoring; coordinate with the DA and other implementing agencies in the planning and implementation of the program; institute and operationalize systems to mobilize personnel, allocate and disburse funds, report on financial and physical performance, and facilitate collaboration with the DA, and the regional and provincial partners; ensure timely availability, positioning, and quality of agricultural machineries; and report regularly to DA, PSC, and other RCEF oversight committees on the progress of implementation.

Section 12

ACRONYMS

AMTEC – Agricultural Machinery Testing and Evaluation Center

BAFE – Bureau of Agricultural and Fisheries Engineering

CAO – City Agriculture Office

CDA – Cooperative Development Authority

COA – Commission on Audit

COCAFMM - Congressional Oversight Committee on Agricultural and Fisheries Modernization

DOLE – Department of Labor and Employment

FCAs – Farmer Cooperatives and Associations

LGU – Local Government Units

MAO – Municipal Agriculture Office

NFA - National Food Authority

PAES – Philippine Agricultural Engineering Standards

PAO – Provincial Agriculture Office

PCAF - Philippine Council for Agriculture and Fisheries

PHilMech –Philippine Center for Postharvest Development and Mechanization

PhilRice – Philippine Rice Research Institute

PSABE – Philippine Society of Agricultural and Bio-systems Engineers

RFO – Regional Field Office

SEC – Security Exchange Commission

SUC – State Universities and Colleges

TESDA – Technical Education and Skills Development Authority

Section 13

DEFINITION OF TERMS

Recipients/Beneficiaries – refer to the rice farmer organizations or associations who have complied the minimum requirements as required by the implementing guidelines of the RCEF-Mechanization Component.

Farmer Cooperatives and Associations (FCAs) – refer to rice farmers cooperatives, associations or corporations duly registered with appropriate government agencies and which are composed primarily of rice producers, farmers, farm workers, agrarian reform beneficiaries who voluntarily join together to form business enterprises or non-business organizations which themselves own, control, and patronize. Rice based FCA shall be the recipients of the agricultural machineries and postharvest facilities of the RCEF.

Farm Machinery and Equipment - refers to the machinery and equipment for the land preparation, crop establishment, harvesting and threshing, drying and milling. It includes but is not limited to, tractors and its implements, power tillers, seeders, transplanters, windmills, harvesting machines, crop protection, maintenance equipment, irrigation equipment and accessories, and postharvest machines and equipment.

Collaborators – refer to the partner implementers specifically the DA-RFOs and LGUs. A MOA shall be forged to formalize the agreement and as a manifestation of commitment in the implementation of the program.

Section 14
SEPARABILITY

In case any one or more of the provisions contained in this Administrative Order shall for any reason be held to be invalid, illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

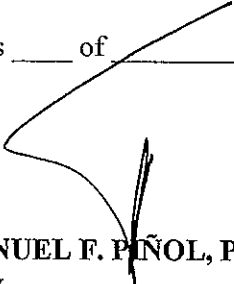
Section 15
AMENDMENTS

The PSC shall periodically review and assess the implementation of this AO and submit recommendations for the amendment of any of its provision. Amendments to this AO shall be subject to the approval of the PSC.

Section 16
EFFECTIVITY

This implementing guideline shall be effective immediately upon publication in Official Gazette or any newspaper of national circulation.

Done this ____ of _____ 2019, Diliman, Quezon City, Philippines.


EMMANUEL F. PIÑOL, PhD
Secretary
Department of Agriculture and
Chairperson, Program Steering Committee - RCEF