

Financing for Sustainable Agricultural Mechanization: A program review in Bangladesh context



Dr. Md. Monjurul Alam
Professor, Department of Farm Power and Machinery
Bangladesh Agricultural University
Mymensingh-2202, Bangladesh
Email: mmalam.bau@gmail.com

*7th Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific
Financing for Sustainable Agricultural Mechanization*

27-29 November 2019, Jeonju, Republic of Korea



CSAM





General Background

Successes

- Bangladesh is the 4th largest rice producer, 3rd largest vegetable and inland water fish producer and 5th largest aquaculture fish producer in the world.
- Since independence, the production of paddy has increased over three folds (55.5 million tons in 2017; BBS, 2018) compared to double the population growth and attains self-sufficiency in paddy production.

Challenges

- Agricultural land is decreasing by 0.5% per year (FAO, 2014).
- In 2017, on-farm labor employment was about 43% of rural labor force and expected to be reduced to about 36% by 2020 and 20% by 2030 (FAOSTAT, 2017).
- There is potential yield gap between research and on-farm production.

Potential Solution

- Appropriate scale mechanization with public sector subsidy would have been a potential solution of the challenges.



Present Status of Agricultural Mechanization

Status of Agricultural Machinery and Installed Power

Agricultural Machinery	Number	Number/'000 ha	Available Power (kW/ha)
Tractor	35000	4.12	2.84
Power Tiller	700000	82.30	
Pump (DTW)	35322	4.15	
Pump (STW)	1575136	185.20	
Pump (LLP)	300613	35.34	
Rice Transplanter	400	0.05	
Reaper	3000	0.35	
Combine Harvester	1200	0.14	
Closed Drum Thresher	220000	25.87	
Open Drum Thresher	150000	17.64	
Corn Sheller	43500	5.11	
Sugarcane Crusher	50000	5.88	
Winnower	2000	0.24	

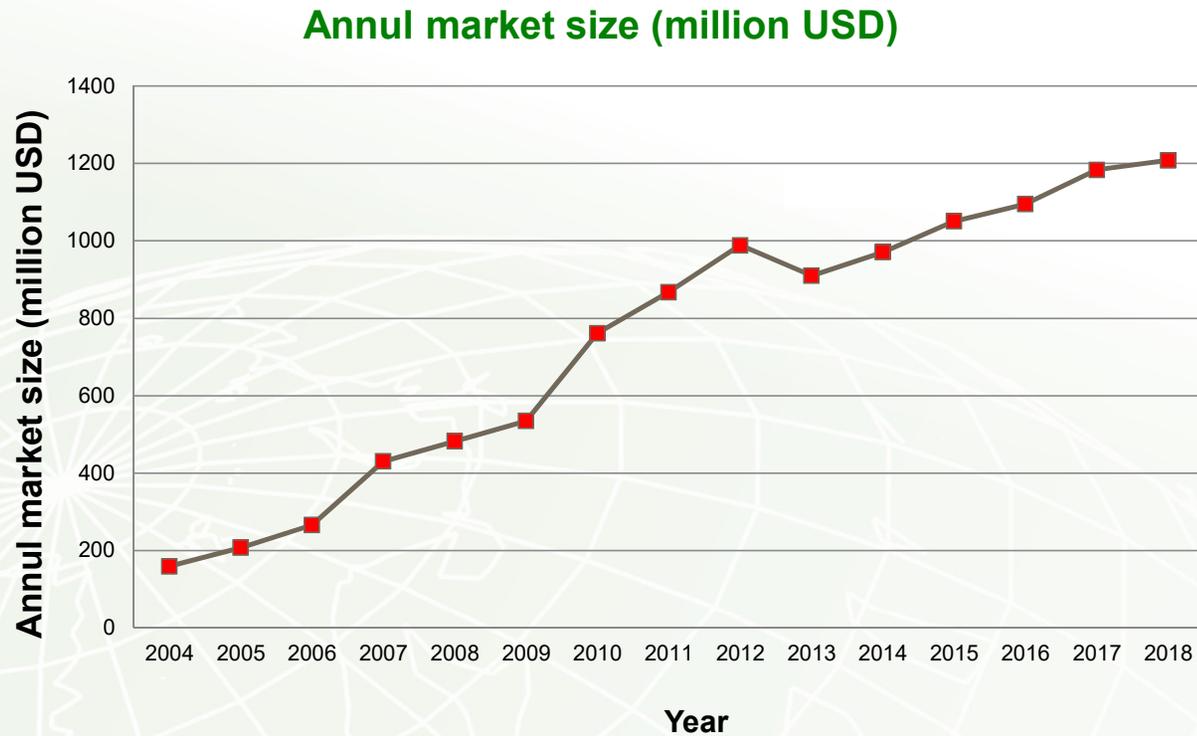
Status of Agricultural Mechanization

Activity	% Mechanized
Cultivation	90
Irrigation	95
Transplanting	0.1
Fertilizer application	1
Weeding	65
Insecticide application	80
Harvesting	0.8
Threshing	70
Winnowing	6
Drying	2
Storing	4

Source: Appropriate Scale Mechanization Innovation Hub (ASMIH)-Bangladesh, 2019

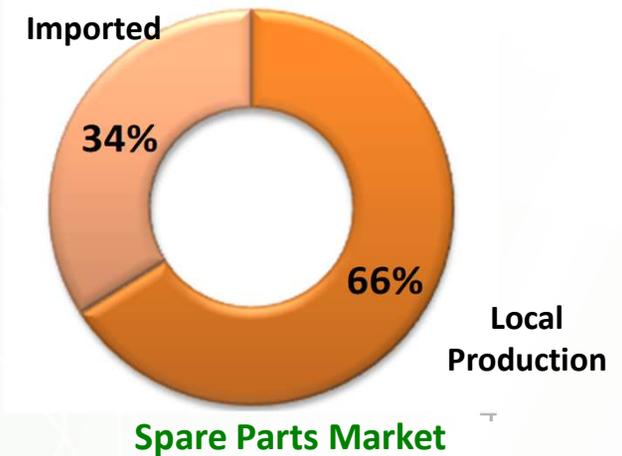
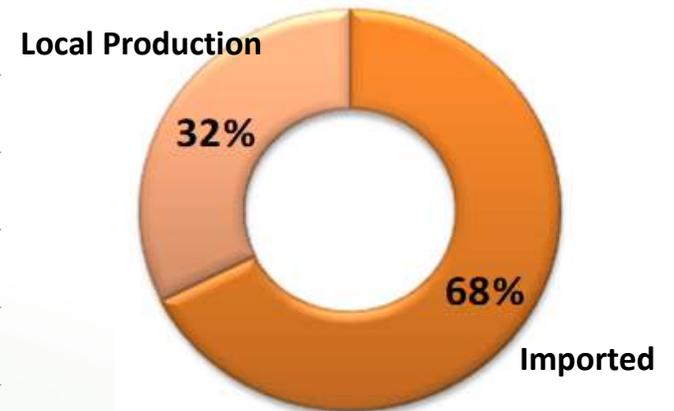


Trend of Agricultural Machinery Market



Source: Appropriate Scale Mechanization Innovation Hub (ASMIH)-Bangladesh, 2019

Agricultural Machinery Market





Subsidy Program in Bangladesh

Project: Enhancement of Crop Production through Farm Mechanization-Phase II

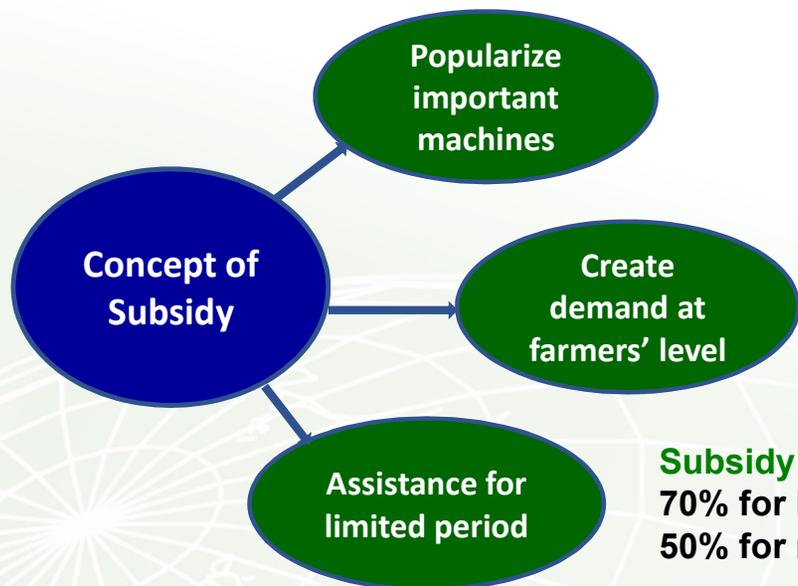
Implementation period:	July 2013 to June 2018
Project cost :	41.4 Million USD
Project Area:	217 Upazilas of 64 Districts
Executing Agency :	Department of Agricultural Extension (DAE)
Source of funding:	Govt. of the Peoples Republic of Bangladesh

Overall Objective of the project

The major objective of the program was to promote appropriate farm machinery to farmers, farmers' group and local service providers (LSP) to reduce cost of crop production, increase cropping intensity, minimize crop loss and sustaining crop production along with capacity building of the stakeholders.



Farm Mechanization Activities



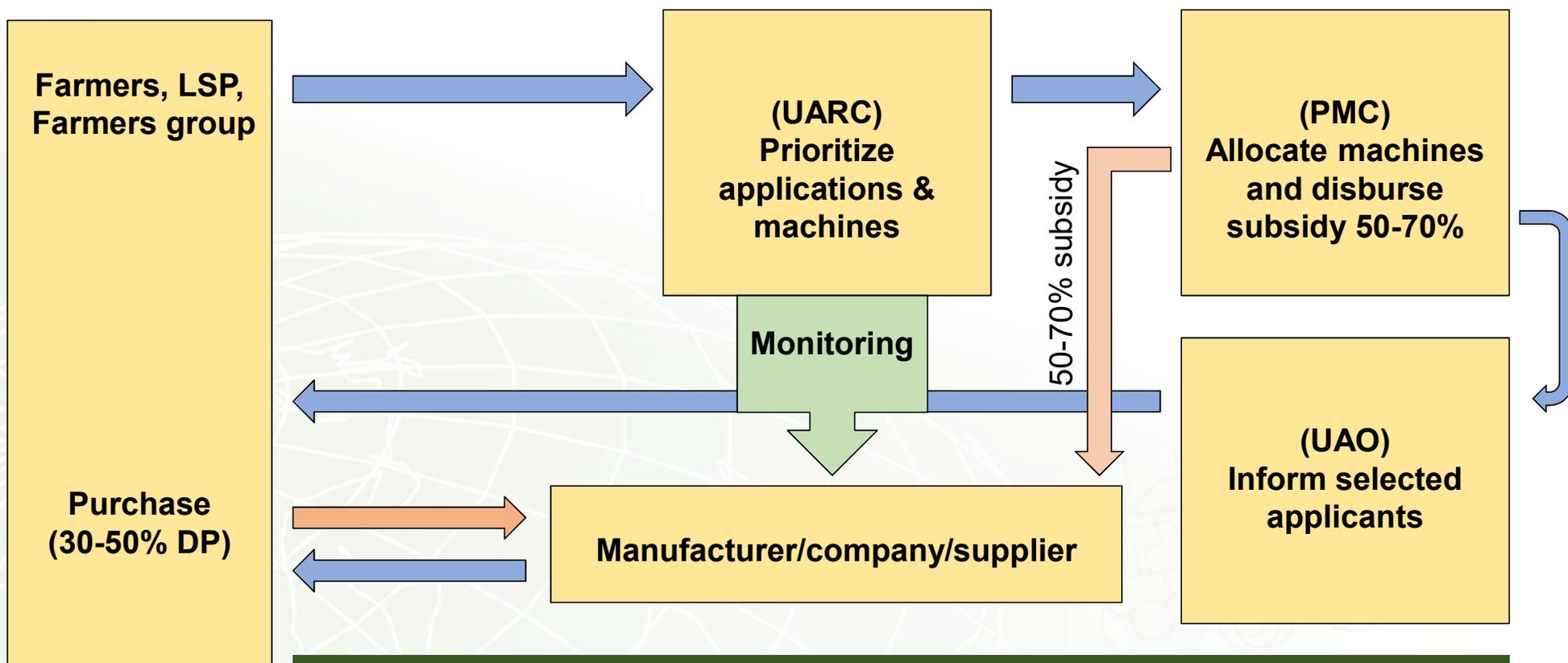
Subsidy Level
 70% for Haor & Coastal areas
 50% for rest of Bangladesh

A set of five machines, power tiller (2WT), Reaper, Mini-combine Harvester, Rice transplanter and Seeder (PTOS) has been provided to 300 farmers' groups for creation of custom hiring rental service.

	Power Tiller	13182
	Rice Transplanter	125
	Reaper	4510
	Mini -Combine Harvester	1388
	Power Tiller Operated Seeder	1994
	Power Thresher	7469
	Sprayer	1100



Subsidy Disbursement Framework



A technical committee evaluates the quality of machines and selects suppliers

LSP- Local service provider; UARC- Upazila agricultural rehabilitation committee; PMC- Project management committee
UAO- Upazila Agriculture Officer; DP – Down payment



Credit Offered on Subsidy Machines by Private Company

Name of the machine	Mini-Combine Harvester
Total price (BDT)	700000
Subsidy Amount (BDT)	350000 (Subsidy 50%)
Price after subsidy (BDT)	350000 (Remaining 50%)
Down payment (BDT)	150000
Principal amount (BDT)	200000
Number of Installments	12
Rate of interest (flat)	12%

Documents Required

- Subsidy award letter from DAE
- Application for credit
- Photograph
- One granter
- One nominee
- Proof of residency
- National ID
- Bank check as security equal to loan amount
- Non- judicial stamp for agreement





Capacity Building

Hands on Training



Demonstration

Combine Harvester: 4000
Reaper: 3750
Rice Transplanter: 4000
PTOS:1000
Bed Planter: 2500
Mechanized Farm demo: 20

Training

Machine operator: 300 batch
Rural mechanic: 42 batch
Technical officer: 15 batch
Regional workshop: 25
National workshop: 1



Recommendations

- ❖ The subsidy program has positive impact on popularization and mechanization of agricultural activities. Such program need to be continued for a certain period to sustain the agricultural mechanization.
- ❖ Digitization of application, processing and selection of subsidy program.
- ❖ Quality is a big concern in field level performance of the machines. Frequent field level monitoring and quality inspection would ensure the benefits of subsidy and mechanization at large.
- ❖ After sales service of the supplied machines need to be ensured through contractual obligation. The process may improve by digitization of after sales services.
- ❖ Price of the fast wearing spare parts to be publicly announced so that farmers/LSP/farmers' groups are not be looser and able to decide the sources of competitive purchase.
- ❖ A policy option need to be formalized so that commercial banks and financial institutes could deliver specific percentage of credit for agricultural machines.
- ❖ Local agricultural machinery manufacturers to be encouraged through subsidy policy options for having modern capital machinery, capacity building and marketing incentives.



Thanks