



CSAM



# COUNTRY PAPER

## BANGLADESH

ON

**Human Resource Development for Sustainable Agricultural Mechanization**

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*3<sup>rd</sup> Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific*  
*3<sup>rd</sup> ASEAN Conference on Agricultural and Biosystems Engineering*  
*Co-located with the 12th Engineering Research and Development for Technology in Agriculture*

*9-11 December 2015, Manila, the Philippines*



# Bangladesh with Regional Countries



Bangladesh is a South Asian country lies between  $23^{\circ} 34'$  and  $26^{\circ} 38'$  N latitude and between  $88^{\circ} 41'$  and  $92^{\circ} 41'$  E longitude. The country is bounded by India on the west, north, and northeast; Myanmar on the southeast; and the Bay of Bengal on the south.





# Farm Machinery Statistics in Bangladesh



Sl. No.	Farm Machinery	Number of unit
1	Power tiller	About 7,00,000
2	Tractor	> 60,000
3	High speed rotary tiller	> 4,000
4	Weeder	> 2,50,000
5	Seeder Transplanter	➤ 1000 ➤ 150
6	Sprayer	12,50,000
7	Combine harvester	130
8	Reaper	500
11	<b>Open drum thresher</b>	<b>&gt; 2,80,000</b>
10	<b>Closed drum thresher</b>	<b>&gt; 50,000</b>
11	Winnower	> 3,000
12	USG Applicator	> 16,000
13	Hand maize sheller	12,000
14	Power maize sheller	30,000



# Agricultural Machinery Adaption Status in Bangladesh



✓ <b>Land preparation</b>	:	<b>&gt;90% mechanical power</b>
✓ Seeding ✓ planting ✓ Transplanting ✓ Fertilizer application ✓ Insecticide application	:	Started by machine (Showing encouraging)
✓ <b>Irrigation</b>	:	<b>&gt;95% by power operated</b> STW/DTW /LLP pump
✓ Harvesting ✓ Reaper & combine harvester	:	Mostly manually >90-95 % >10-5 %
✓ <b>Threshing</b>	:	<b>Rice-wheat &gt;75%</b>
✓ <b>Shelling</b> ✓ Cleanning ✓ Dryer ✓ Storage	:	<b>maize &gt;95% by sheller</b> Started by machine (Showing encouraging)





# I. Overview of Human Resource Development Work in the Field of Agricultural Mechanization in Bangladesh



## i. Employment status of available agricultural mechanization workforce

Institution	Division/Revenue/Project/	Number	Occupation
Bangladesh Agricultural Research Institute (BARI)	FMP Engineering Division	10	Researcher
	IWM Division	9	Researcher
	MRM Division	2	Researcher
	Post harvest Technology Division	7	Researcher
Bangladesh Rice Research Institute (BRRI)	FMPHT Division	12	Researcher
	WMM Division	4	Researcher
	IWM Division	10	Researcher
	Grain Quality & Nutrition	2	Researcher
Bangladesh Institute of Nuclear Agriculture (BINA)	Agricultural Engineering Division	4	Researcher
Bangladesh Sugar Crop Research Institute (BSRI)	Agricultural Engineering Division	4	Researcher
Bangladesh Jute Research Institute (BJRI)	Mechanical Processing Division	4	Researcher
<b>Sub-Total</b>		<b>55</b>	



## Employment status of available agricultural mechanization workforce (CONT.)



Institution	Division/Revenue/Project/	Number	Occupation
Department of Agricultural Extension (DAE)	Revenue Post	25	Agricultural Engineer
	Development Post	30	
<b>Sub-Total</b>		<b>55</b>	
Bangladesh Agricultural University (BAU)	FP M Department	22	Teacher
	IWM Department	19	Teacher
	Farm Structure Department	10	Teacher
Sylhet Agricultural University (SAU)	Farm Machinery Department	3	Teacher
	IWM Department	7	Teacher
	Agricultural Construction and Environment Engineering Department	4	Teacher
Hajee Danesh Science and Technology University (HDSTU)	Department of Agricultural & Industrial Engineering Department	9	Teacher
<b>Sub-Total</b>		<b>74</b>	
<b>Total</b>		<b>197</b>	



- ii. **Credentialing/licensing/regulations of agricultural engineers, agricultural machinery operators and technicians, if applicable : **Not applicable.****
  
- iii. **Agencies/institutions involved in agricultural mechanization human Resource development and their current programs/projects**



# List of trainings and field demonstrations :

## FMPE Division, BARI



Sl.	Name of the course	Duration (day)	No. of batch	Category of trainees	Trainees per batch	No. of person trained	Source of fund
1	Uses of Farm Machinery and Efficient Irrigation System Management	5	1	NARS Scientists and University Teachers	25	25	BARC
2	BARI Developed Farm Machinery	1	1	UAO	20	20	GoB (FMTD)
3	BARI Developed Farm Machinery	1	10	SAAO	22	220	GoB (FMTD)
4	BARI Developed Farm Machinery	2	45	Farmers/ operators	20	900	GoB (FMTD)
5	Mechanic Training	1	1	Mechanic	25	25	BARC
6	Manufacturing Technique of BARI Farm Machinery	5	1	Farm Machinery Manufacturers	15	15	GoB (FMTD)
7	Field demonstration on BARI Developed Farm Machinery	1	130	Farmers	40	5200	GoB (FMTD)
	<b>Total Training</b>		<b>59</b>			<b>1205</b>	
	<b>Total Field Demo</b>		<b>130</b>			<b>5200</b>	
	<b>Grand Total</b>		<b>189</b>			<b>6405</b>	



# List of trainings and field demonstrations

## FMPHT Division, BRRI



Training/ Demonstration	Number of participants per batch	Durati on	Number of batch	Number of persons
Farmers/operators training	20	2 days	221	4420
Field demonstration	40	1 day	664	26560
Scientific Officers training	25	1 day	2	50
Machinery manufacturer training	15	5 days	7	105
Sub-Assistant agricultural officer training	22	1 day	8	176
<b>Total</b>			<b>902</b>	<b>31,311</b>



## List of different trainings and field demonstrations: **DAE**

Project Activities	Projects		
	<b>Enhancement of crop production through farm mechanization</b>	<b>Enhancement of crop production through improved on-farm water management technologies</b>	<b>Farm machinery technology development and dissemination project</b>
Training, persons	Mechanic/farmers 36000	Farmers 5600 WM	Farmers 2200
Workshop, persons	Diff. level of Stakeholders 1200	300 WM	-
Agricultural Fair, nos	All farm machinery 2	-	-
Demonstrations, Nos.	Agricultural machinery 13000  Mechanized farm 20	10800 WM	185
Field Day, persons	-	90,000 WM	-



## **II. Strategies, policies, and national programmes/initiatives of human resource development of agricultural mechanization**



- **Rapid expansion of mechanization is needed due to the dearth of animal draft power, farm labors and declining interest of young people in traditional agriculture.**
- **DAE organize training and demonstration for farmers on agricultural, social and environmental development in their technology transfer process.**
- **Several other training institutions teach and train personnel who serve agriculture sector. These institutions are:**
  - **National Agricultural Training Academy (NATA) in Joydebpur,**
  - **Graduate Training Institute (GTI) and**
  - **Agricultural Training Institute (ATI) 12 nos, located throughout the country.**
- **However, the training facilities vary considerably among the institutes,**
- **Facilities are inadequate and need support for overall improvement.**



## **II. Strategies, policies, and national programmes /initiatives of human resource development of agricultural mechanization ( Cont.)**

- **Govt. of Bangladesh, in the 7<sup>th</sup> five year plan (2016-2020), includes human resources development and institutional capacity building for all research & extension agencies are as follows:**
  - i. Higher study (MS, PhD/Post Doc) at home & abroad;**
  - ii. Skill development training for officers and staffs at home & abroad;**
  - iii. Capacity building training in ICT;**
  - iv. Overseas training & study visits, seminar, workshop for scientists/officers;**
  - v. Knowledge & technology based skill development training for farmers, traders & entrepreneurs;**
  - vi. Motivational tours/exposure visit for farmers.**



### **III. The need assessment of human resource development of agricultural mechanization in your country**

- 1. Development of skill and knowledge of the researchers working for the improvement of agricultural machinery is of immense importance.**
- 2. This can be achieved through training and visit to countries having updated technologies.**
- 3. Such training and visit will enable them to work with improved skills and adequate confidence.**
- 4. The machine users, artisans and traders are mostly illiterate and don't have substantial knowledge and skill about machine operation, repair and maintenance.**
- 5. The manufacturers do not provide 'after sale service' to the users.**



### **III. The need assessment of human resource development of agricultural mechanization in your country (Cont.)**

- 6. From field experience it has been found that machines are left without working for minor and easily repairable faults.**
- 7. On availability of an artisan or a mechanic, the farmers get them repaired at the expense of high charges.**
- 8. But in other cases, where mechanics are not readily available, they leave the machine without operation.**
- 9. The village artisans are rarely trained and lack adequate knowledge and skill about machines.**



#### **IV. Challenges and constraints faced for human resource development of agricultural mechanization in your country**

- **Agricultural research has been a neglected area with low budgetary allocation and comparatively lower research and financial facilities for scientists.**
- **This largely resulted in the “brain drain” of trained professionals who migrated to research centers of developed countries.**
- **This trend needs to be reversed by increasing research and extension allocation of budget at least 5% of Agricultural GDP (1.5% current allocation),**
- **in-situ promotion of the researchers with good governance and accountability.**



## **V. Solutions and suggestions for human resource development for sustainable agricultural mechanization**

(From both country and regional perspectives)

- **Presently, the government has given emphasis on farm mechanization and started funding for rapid agricultural mechanization.**
- **But the problem lies with the development of expertise and skills of the researchers and the manufacturers.**
- **Both researchers and manufacturers need appropriate and adequate trainings on improved farm mechanization and associated machines**
- **so that they can design and develop better machinery. Further, the existing institutes do not have adequate modern facilities for fabricating and testing these machines.**



## **V. Solutions and suggestions for human resource development for sustainable agricultural mechanization (Cont.)**

(From both country and regional perspectives)

- **So, funds are required from donors for these purposes in addition to research and development.**
- **Establishment of a “National Center for Testing Agricultural Machinery (NCTAM)” for development, testing and evaluation of farm machinery.**
- **Establishment of national level “Agricultural Mechanization Advisory Committee**
- **Formulate Agricultural Mechanization policy government should regulate & impose obligation of testing for locally manufactured & imported items**



**Thank You Very  
Much.....**