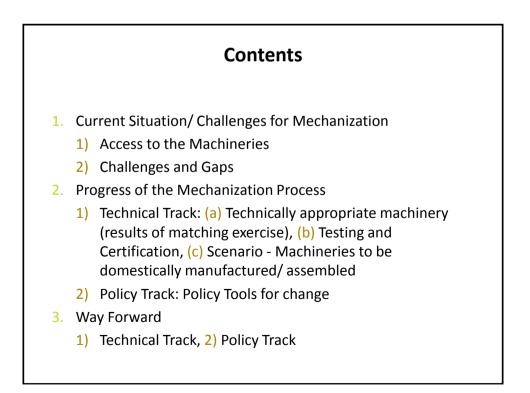
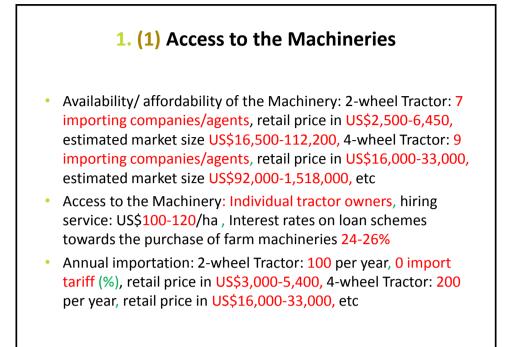
Progress of Agricultural Mechanization Process in Uganda

The Fifth General Meeting of CARD 5-6 February 2013 in Dakar





1. (1) Acce	ess to the Ma	chineries	
 Availability/ affordabili 	ty of the Machine	ry: 2-wheel 1	Fractor:
 7 importing companie estimated market size 			00-6,450
Importing companies/agents	Tractor Make & HP	retail price in US\$	estimated market size US\$
Farm Engineering Industries Ltd	Yanmar (9.5& 11HP) Greaves (14HP)	5,400 & 6450	59,400 & 70,950
China North machine (U) Co. Ltd	Jiang Dong (10HP) Changfa (16&18HP)	2,500 5,200 & 6000	57,200
China Huangpai Food machines (U) Ltd	SH101 (10 HP) Amec (16 HP)	3,500 4,400	57,750 72,600
Asia Agro Industries (U) Ltd	Johnston (13HP)	3,200	49,280
National Agro Machinery Ltd	Shandong (10.5HP)	3,400	112,200
ETC Agro Tractors and Implements Ltd			
Car and General (U) Ltd	Honda (7.5HP)	3,000	16,500

1. (1) Ad	ccess to the Mac	hineries	
• 9 importing compan	bility of the Machinery ies/agents, retail price re US\$92,000-1,518,00	in US\$16,00	
Importing companies/agents	Tractor Make	Retail price in US\$	Estimated market size US\$
Engineering Solutions	Massey Ferguson (India), Europad (China), Foton (China)	25,000 29,000 32,000	287,500 166,750 184,000
Heavy Duty Uganda Ltd	Massey Ferguson (reconditioned) (75HP)	20,000	360,000
Farm Engineering Industries Ltd	Sonalika (60HP) (90HP)	26,000 32,000	149,500 736,000
UGIRAN Company Ltd /Akamba (U) Ltd	Massey ITIMCO (60HP) (75 HP) (90 HP)	24,000 28,000 31,000	138,000 640,000 534,750

1. (1) Access to the Machineries

- Availability/ affordability of the Machinery: 4-wheel Tractor:
- 9 importing companies/agents, retail price in US\$16,000-33,000, estimated market size US\$92,000-1,518,000

Importing companies/agents	Tractor Make	Retail price in US\$	Estimated market size US\$
Cooper Motors Corporation	New Holland (60HP) (90HP)	26,000 33,000	598,000 1,518,000
ETC Agro Tractors & Implements Ltd	Mahindra (90HP)	32,000	552,000
Wava holdings Ltd	Deutz (65HP)	24,000	138,000
Car and General (U) Ltd	Tafe (75HP)	32,000	184,000
Farmrite Machineries & Equipments Ltd	Massey Ferguson (Pakistan) (40HP) (75HP)	16,000 30,000	92,000 345,000

Access to the Machinery service: US\$100-120/ha		· •
the purchase of farm ma		
Hiring service	US\$##/ha	
Individual tractor owners	100 - 120	
Access to the Machiner	ry: 4 companies pro	ovide farm machinery
 Access to the Machiner back-up service : US\$12 	· · ·	ovide farm machinery
back-up service : US\$12	20/ha,	ovide farm machinery
	· · ·	ovide farm machinery
back-up service : US\$12	20/ha,	ovide farm machinery
back-up service : US\$12 Hiring service Cooper Motors Corporation	20/ha, US\$##/ha	ovide farm machinery
back-up service : US\$12 Hiring service	20/ha, US\$##/ha 120	ovide farm machinery

1. (1) Access to the Machineries

• Annual importation: 2-wheel Tractor :

Importing companies/agents	Tractor Make	Number per year	Import tariff (%)	retail price in US\$
Farm Engineering Industries Ltd	Yanmar	10	0	5,400
China North machine (U) Co. Ltd	Changfa	10	0	5,200
China Huangpai Food machines (U) Ltd	SH101	15	0	3,500
Asia Agro Industries (U) Ltd	Johnston	14	0	3,200
National Agro Machinery Ltd	Shandong	30	0	3,400
ETC Agro Tractors and Implements Ltd			0	
Car and General (U) Ltd	Honda	5	0	3,000

1. (1) Ac	cess to the N	lachine	ries	
Annual importation	: 4-wheel Tractor	:		
Importing companies/agents	Tractor Make	Number per year	Import tariff (%)	retail price in US\$'000
Engineering Solutions	Massey Ferguson, Europad, Foton	10, 5, 5	0	25, 29, 32
Heavy Duty Uganda Ltd	Massey Ferguson	15	0	20
Farm Engineering Industries Ltd	Sonalika	5, 20	0	26,32
UGIRAN Company Ltd /Akamba (U) Ltd	ITIMCO	5,20,15	0	24, 28, 31
Cooper Motors Corporation	New Holland	20,40	0	26, 33
ETC Agro Tractors & Implements Ltd	Mahindra	15	0	32
Wava holdings Ltd	Deutz	5	0	24
Car and General (U) Ltd	Tafe	5	0	32
Farmrite Machineries & Equipments Ltd	Massey Ferguson	5,10	0	16, 30
Guidance:	•			

1. (2) Challenges and Gaps for Mechanisation

Technical Aspects

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- Lack of farmers' capacity in operation and management of machinery
- Optimal specification of machineries not identified
- Absence of a national centre for agricultural machinery and equipment testing and evaluation
- Lack of legal advisors on certification

Policy aspects

- Lack of farmers' financial capacity
- Absence of extension services
- Difficulties to access finance for agricultural machineries
- Absence of established zonal tractor hire services through PPP
- Weak linkages between research, training institutions, extension, farmers and market for effective agric mechanization development and promotion
- Lack of agricultural machinery after-sales services

1. (2) Challenges and Gaps for Mechanisation (Cont'd)

Technical Aspects

- Lack of trained personnel in sales and marketing
- Absence of a delivery system
- Lack of trained personnel for farm machinery repair and maintenance
- Lack of an agricultural machinery and equipment manufacturers association
- Lack of rural-based agricultural machinery repair and maintenance workshops

Policy Aspects

- Lack of agricultural machinery standards and test codes
- Lack of government loans to agricultural machinery dealers

2. (1-a) Matching Farm Equipment to Rice production systems

Based on the analysis, technically appropriate machinery are proposed:

• For plowing/ tilling: xxxxx, because: xxxxx

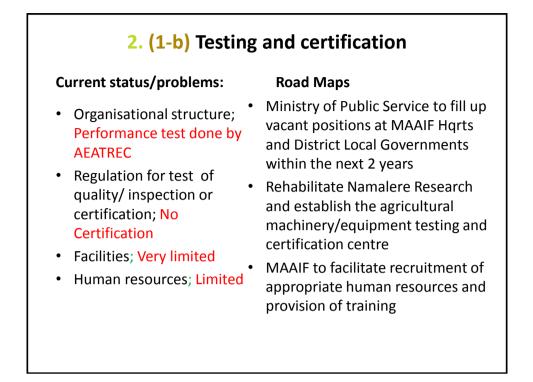
Appropriate machinery for plowing/tilling	Reasons
Power tiller (10-12HP range)	Works faster than hand hoe
	High output
	Easy to operate and service
	Suitable for both upland and lowland paddy
Tractor (40-75HP range)	Works faster than power tiller
	Higher output
	Suitable for medium to large scale farming
	Can be operated under hire service

	rm Equipment to Rice on systems
Based on the analysis, technica proposed:	lly appropriate machinery are
• For harvesting: xxxxx, becau	se: xxxxx
Appropriate machinery for harvesting	Reasons
4-row Paddy Reaper	Works faster
	High output
	Easy to operate and service
	Suitable for both upland and lowland paddy
	Good for individual or group ownership
	Can be operated under hire service

2. (1-a) Matching Farm Equipment to Rice production systems

Based on the analysis, technically appropriate machinery are proposed:

Appropriate machinery for Rice milling	Reasons
Small Integrated Rice milling unit, of capacity 500-2,000kg/hr comprising of	Improve quality of locally milled rice
Paddy Pre-cleaner	Removing all impurities and unfilled grains from paddy
Paddy husker (rubber roll type)	De-husking paddy into brown rice
Paddy separator	Separating un-husked paddy from brown rice
De-stoner unit	Separating small stones from milled rice
Polishing unit (vertical abrasive + vertical Friction types)	Removing all or part of the bran layer and germ from brown rice & improving appearance of milled rice
Rice grader (Length grader)	Separating small and large broken from head rice
Bucket Elevators	bulk transport and conveyance of raw paddy, milled rice from one point to another



2. (1-c) Scenario: List of machineries to be domestically produced

- 1. List of machineries to be domestically produced/ manufactured/assembled:
- **in production:** Mould board plough, Rice weeders, Rice threshers, Paddy cleaners, Small trailers
- in 3 years: Chisel plough, Treadle pump
- in 10 years: Disc plough, Planter, Rice huller
- **beyond 10 years:** Rice destoner, Rice grader, Paddy separator, Paddy dryer, De-husker, Reaper

2. (1-c) Scenario: List of machineries to be domestically produced

- Capacity Development needs:
- Human Resource development
 - Research and Development (Engineers)
 - Raw materials (Metallurgists)
 - Manufacturing (Mechanical Engs, Electrical Engs, Technicians, Artisans)
 - Assembling (Mechanics, Technicians)
 - Testing (Engineers, Machine operators)
- Organizational development
 - Management structures (Dealers' Associations and Manufacturers' Association)
 - Processes Marketing, sales (Economists, Marketers', Sales Engs)
 Delivery System (Rural networking of dealers)
 - Procedures Maintenance & Support (Service Engs, Mechanics, Techn

Institutional and Legal Framework development

Making legal and regulatory changes – Certification (Legal Advisors)

2. (2) Policy Tools and Related Actions for change [1/3] – Enabling Environment

- Suggested Policy change: Testing, evaluation, safety inspection and certification of imported machinery,
- i) What changes do you suggest to this subject matter?,
 - Strengthen the functions of AEATREC for agricultural machinery testing and evaluation
 - Empower the Uganda National Bureau of Standards (UNBS) to establish Agricultural Machinery standards and test codes with AEATREC
 - Empower institutional capacity for certification of agricultural machinery and equipment
 - Promote alignment and consistency in standards of agricultural machineries and implements in Regional Networking

ii) For whom? = Actors on supply chain,

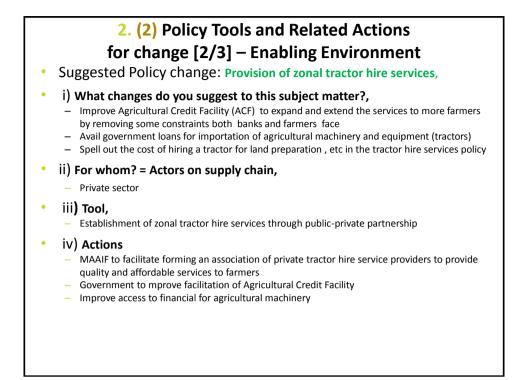
International and domestic manufacturers, Importing agents and Dealers

• iii) Tool,

Establish testing, evaluation, safety inspection and certification of quality of agricultural machineries, implements and spare parts

iv) Actions

- MAAIF to facilitate improve the existing organization structures at AEATREC, UNBS
- Develop required minimum facilities at AEATREC for machinery testing and certification
- Recruit appropriate human resources and provide trainings
- MAAIF (PS) to link with international organizations to facilitate regional networking

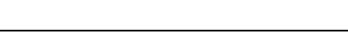


2. (2) Policy Tools and Related Actions for change [3/3] – Enabling Environment

 Suggested Policy change: Build capacity of mechanics for repair and maintenance,

- i) What changes do you suggest to this subject matter?,
 - Avail more qualified mechanics in rural areas
 - Provide hands-on / vocational training of mechanics at diploma and certificate levels
- ii) For whom? = Actors on supply chain,
 - Mechanics
- iii) Tool,
 - Build human capacity for use and maintenance of agricultural machinery/equipment
- iv) Actions
 - MAAIF to support establishment of rural-based agricultural machinery repair and maintenance workshops
 - MAAIF to support establishment of rural-based polytechnic / vocational institutes

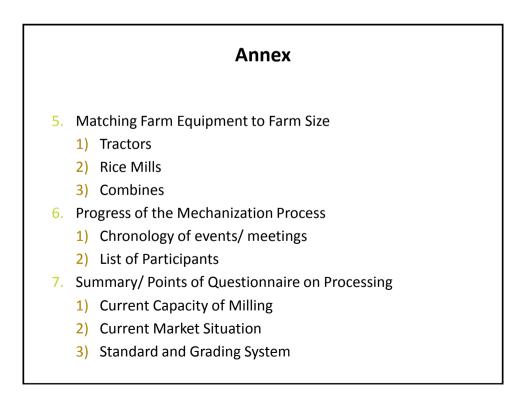






- Organized internal meetings with high-level officers in MAAIF to make the agricultural mechanization policy and strategy complete and concrete
- Facilitate inter-ministerial meetings on agricultural mechanization policy and strategy
- Organize wider stakeholders meetings to sensitize on enabling environment to promote agricultural mechanization

End



5. (1) Matching Farm Equipment to Farm Size Tractors			
10 selected Steps out of 34	2 wheel	4 wheel	
1. Area covered (ha)	25	100	
10. Equipment sizes available (metre)	0.25	0.5	
12. Draft (kN/m)	8	8	
18. Purchase price (\$)	3,500	16,000	
28. Total Operating Cost (\$/hr)	5.44	13.88	
31. Total Fixed Cost (\$/hr)	3.85	14.27	
32. Total Cost/hr (\$/hr)	6.96	28.14	
33. Cost/ha (\$/ha)	66.84	67.55	
Contract Rate (\$/ha)	76.87	77.66	
Hiring service (\$/ha)	100	100	

5. (2) Matching Farm Equipment to Farm Size Rice Mills			
10 selected Steps out of 34	Small	Medium	
1. Volume Milled (tons/year)	400	600	
10. Equipment sizes available (kg/hr)	500	650	
	_		
18. Purchase price (\$)	2,100	3,400	
28. Total Operating Cost (\$/hr)	5.66	10.43	
31. Total Fixed Cost (\$/hr)	1.58	2.62	
32. Total Cost/hr (\$/hr)	7.24	13.05	
33. Cost/t (\$/t)	26.06	26.09	
Contract Rate (\$/t)	33.87	33.92	
Charged in the market (\$/t)	37.0	37.0	

Date	Actions taken (meeting, etc) after March '12
19-03-2012	NRDS Taskforce drafted the following: - Publication of the NRDS - Rice data for 2008 - Rice data for 2011 - NRDS implementation activities
11-04-2012	 NRDS Taskforce reviewed and approved the following: Publication of the NRDS Revised rice data for 2008 Approved rice data for 2011 NRDS implementation activities (profiles of new rice projects) approved.
)3-07-2012	Policy Level Stakeholders' Consultation Meeting for Agricultural Mechanization

Date	Actions taken (meeting, etc) after March '12	
22-24/10/ 12	2 nd Mechanization workshop in Nairobi, Kenya	
5/12/12	Held a meeting on agricultural finance between MAAIF and Centenary Bank	
14/12/12	Internal meeting on harmonization of non-ATAAS and CARD	
4/12/12	-	

Stakeholders' Consultation Meeting)						
No.	Name	Job Title	Organisation			
1	Bitariho Deo	Custom Supervisor	Uganda Revenue Authority			
2	Kaleebi Mathias	Standards Inspector	Uganda National Bureau of Standard			
3	Muliisa Klennie	Sr. Officer Agric. Fin. Facility	Bank of Uganda			
4	Tinkamanyire Julius	Sr. Mech. Engineer	Min. of Works and Transport			
5	Kaddu Peter	Executive Manager	Uganda Manufacturers' Association			
6	Farooqui Nawaaz	Project Coordinator	Farm Engineering Industry Ltd			
7	Opolot Charles	Director	Local Government Association			
8	Odogola Wilfred	Lecturer	Busitema University			
9	Mutabazi Sunday	Commissioner	Min. of Agriculture, Animal Industry and Fisheries			
10	Rasit Pertev	Sr. Agric. Economist	World Bank			

7. (1) Current Capacity of Milling [1/3]

	Small <150kg/hr	Medium 150- 300kg/hr	Large >300kg/hr
No of mills	398	9	1
Main source of paddy	Individual Farmers	Individual farmers, Traders	Private sector, individual farmers, out-growers
Mainly sell to?	Rural shops/ brokers	Retail/ wholesalers	Exports/wholesalers , supermarkets
Major problems?	High % of broken grains, Stones. Poor postharvest handling and processing. Poor drying methods. Poor performing rice mills	High % of broken grains, Stones. Poor postharvest handling and processing Poor drying methods. Poor performing rice mills	Inadequate rice supply. Limited access to specialized repair and maintenance services. Poor quality paddy
Memo:			

	Urban	Rural
Total Volume (tons)	101,500	43,500
% of local rice	70%	30%
Grades of the most major rice	2	No grades
Price of the most major rice (\$/kg)	Approx. 1.5	Approx 1.0
Import Tariff (%)	75%	75%
Price difference (%)	0%	0%
Consumers' preference	Aromatic, Whole to broken, Sticky to non-sticky,	Aromatic, Whole to broken, Sticky to non-sticky,
Determinants by consumers	Price, cleanness, level of broken grains, Brand name	Price, cleanness, level of broken grains, Brand name

Any law/ policy on 'grading system' for rice sold in the markets? if yes, please specify, Yes, Uganda National Bureau of Standards		
Milled Rice UNBS Standard US41 2 Grade 1 (whole grain 90%, broken 2 Grade 2 (whole grain 75% broken 2 Grade 3 (whole grain 50% broken 5	10%) 25%)	
Institutional Capacity: Which insti milling standards and grades of ric •Uganda National Bureau of Standa		
What are the limitations in implen •Lack of Awareness •Inadequate capacity by UNBS •Poor quality of rice processing M •Implementation of policies •Lack of rice quality testing facility		