

Progress of Rice Farming Mechanization Process in Rwanda



CARD 2nd Regional Workshop for Promotion of Agricultural
Mechanization

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1. (1) Chronology of events/ meetings

Date	Actions taken (meeting, etc) after March '12
26 April 2012	Stakeholders meeting, core working group identification
10 May 2012	Core group meeting
28 May 2012	Core group meeting
18 June 2012	Core group meeting
2 August 2012	Core group meeting

1. (2) List of the Participants

No.	Name	Job Title	Organisation
1	SENDEGE Norbert	DG Crop production	MINAGRI
2	GAKWAYA Titus	Mechanization Manager	TF I&M/MINAGRI
3	Prof SANKARAHAM	Lecturer	ISAE
4	BOUTOUTA Abdelatif	Mechanization Expert	TF/MINAGRI
5	NDAGANO Jean Claude	Officer	RAB
6	PHILIFE	Staff in trade unit	MINICOM
7	TUYISABE Jean Damascene	VMSC Manager	TF/MINAGRI
8	Mugwaneza Bellise	Agri Business officer	TF /MINAGRI
9	Mutabazi Minc Aime	Extension officer	TF/I&M
10	Narcisse		ABEM
11	Benjamin		RSSP
12	Raphael	DG plannification	MINAGRI
13	FURAHA Pascal	Ag.Program Coordinator	JICA
14	NODA Tatsuki	Ag. Program Manager	JICA

1. (3) Mechanization: Policy Tools and Related Actions - Newly Identified [1/6]

Subject matter (item of reform)	
• Test & evaluation, safety inspection and certification of quality of machinery	
Current status of the subject matter	
No Policy, no strategy and no national standards	
What changes do you suggest to this subject matter?	
Policy , strategy and national standard establishment	
Who do you think will benefit as a result of this change and how?	
Who?	How?
Farmers	Quality warranty of agricultural Machinery
Government (RBS)	Standards data bases, Establishment Testing and Evaluation Centers
Private sector	Production and profitability of agricultural machinery
As side effects, who do you think will be negatively affected by this change and how? In other words, who may oppose to this change and why?	
Who?	How? / Why?
No body	
Is there any measure to mitigate the above negative effects? If yes, what?	
Which ministries / organizations / companies are in charge of this matter? Who are the key persons to consult?	
Institution	Key persons
MINAGRI	PS, Chairman of TF I&M
MINICOM	PS, DG Trade &Industry, DG-RBS
PSF	Chamber of Industry , chamber of Agriculture

1. (3) Mechanization: Policy Tools and Related Actions - Newly Identified [2/6] (Continued)

Subject matter (item of reform)	
• Impose after-sales service, warranty as a pre-condition	
Current status of the subject matter	
No Policies	
What changes do you suggest to this subject matter?	
-Establishment of after-sales service policies; -Warranty should be as pre-condition - Supply of spare parts as pre condition	
Who do you think will benefit as a result of this change and how?	
Who?	How?
Farmers	Can get one years as warranty period,
Private sector	Quality improvement of the services
As side effects, who do you think will be negatively affected by this change and how? In other words, who may oppose to this change and why?	
Who?	How? / Why?
Is there any measure to mitigate the above negative effects? If yes, what?	
Which ministries / organizations / companies are in charge of this matter? Who are the key persons to consult?	
Institution	Key persons
MINAGRI	PS, Chairman of TF I&M
MINICOM	PS, DG Trade &Industry,
PSF	Dealers, Outlet Managers and chamber of industry
RBS	DG and Department of Inspection
RDB	Department of Registration

1. (3) Mechanization: Policy Tools and Related Actions Revised [3/6]

Subject matter (item of reform)	
<ul style="list-style-type: none"> Qualified engineers (university) and experienced technicians 	
Current status of the subject matter	
Very few trained by MINAGRI and KIST	
What changes do you suggest to this subject matter?	
Establishment of specialized Institution in manufacturing	
Who do you think will benefit as a result of this change and how?	
Who?	How?
Manufacturers	Skills, services and designs are developed, other kinds of equipment are manufactured locally
Farmers	Reduced prices of equipments manufactured locally.
As side effects, who do you think will be negatively affected by this change and how? In other words, who may oppose to this change and why?	
Who?	How? / Why?
Is there any measure to mitigate the above negative effects? If yes, what?	
Which ministries / organizations / companies are in charge of this matter? Who are the key persons to consult?	
Institution	Key persons
MINAGRI	PS, Chairman of TF I&M
MINICOM	PS, DG Trade & Industry,
RDB	Investment Department
PSF	Chamber of industry
MINEDUC	PS, Chairman

1. (3) Mechanization: Policy Tools and Related Actions - Newly Identified [4/6] (Continued)

Subject matter (item of reform)	
<ul style="list-style-type: none"> Reduced import duties for raw materials 	
Current status of the subject matter	
Policies are not available	
What changes do you suggest to this subject matter?	
Establishment of policies to reduce import duties for raw materials	
Who do you think will benefit as a result of this change and how?	
Who?	How?
Manufacturers	More benefits, Extension
Farmers	Cheap products
As side effects, who do you think will be negatively affected by this change and how? In other words, who may oppose to this change and why?	
Who?	How? / Why?
Is there any measure to mitigate the above negative effects? If yes, what?	
Which ministries / organizations / companies are in charge of this matter? Who are the key persons to consult?	
Institution	Key persons
MINAGRI	PS, Chairman of TF I&M
MINICOM	PS, DG Trade & Industry
RDB	Investment Department
PSF	Chamber of industry
MINICOFIN	PS, GC RRA

1. (3) Mechanization: Policy Tools and Related Actions - Newly Identified [5/6]

Subject matter (item of reform)	
<ul style="list-style-type: none"> Mechanization promotion 	
Current status of the subject matter	
Strategy is available	
What changes do you suggest to this subject matter?	
Introduction of subsidies of agricultural machinery	
<ul style="list-style-type: none"> Farm machinery subsidies according to the land size Investment subsidies 	
Who do you think will benefit as a result of this change and how?	
Who?	How?
Supply chain (private sector)	Different farm machinery are delivered
Farmer	Different farm machinery are available and promoted
As side effects, who do you think will be negatively affected by this change and how? In other words, who may oppose to this change and why?	
Who?	How? / Why?
Is there any measure to mitigate the above negative effects? If yes, what?	
Which ministries / organizations / companies are in charge of this matter? Who are the key persons to consult?	
Institution	Key persons
MINAGRI	PS, Chairman TF I&M, DG RAB
MINECOFIN	PS
MINICOM	PS, DG Trade and Industry
PSF	Chambers.....
RBS	DG,
RDB	Investment Unit

1. (3) Mechanization: Policy Tools and Related Actions - Newly Identified / Revised [6/6] (Continued-Annex)

Subject matter (item of reform)	
<ul style="list-style-type: none"> Train and License: Provide training, knowledge and information on farm machineries and tools that are appropriate for local use 	
Current status of the subject matter	
Capacity building strategy is available	
What changes do you suggest to this subject matter?	
Establishment of driving license policies for powered machine with more than 20 HP	
Who do you think will benefit as a result of this change and how?	
Who?	How?
Private sector	Establishment of Business training companies
Operators	Capacity building is improved
As side effects, who do you think will be negatively affected by this change and how? In other words, who may oppose to this change and why?	
Who?	How? / Why?
Is there any measure to mitigate the above negative effects? If yes, what?	
Which ministries / organizations / companies are in charge of this matter? Who are the key persons to consult?	
Institution	Key persons
MINAGRI	PS, Chairman TF I&M, DG RAB
MINECOFIN	PS
MINICOM	PS, DG Trade and Industry
PSF	Chambers.....
RDB	

1. (4-a) Mechanization: List of machineries to be domestically manufactured in 3 years [1/4]

Machineries/ Implements (accessories)	Current Import Tarif & VAT <small>(Rwf)</small>	Why, if changed the category? (Advantages)
Moldboard Plough	0%	
Rotary plow	0%	
Iron wheels	0%	
Rice threshers	0%	
Winnower	0%	
Solar Dryer	0%	
Mechanical weedder	0%	

1. (4-a) Mechanization: List of machineries to be domestically manufactured in 10 years [2/4]

Machineries/ Implements (accessories)	Current Import Tariff & VAT	Why, if changed the category? (Advantages)
Power tiller steering system, handle bar	18%	
Chassis	18%	
Paddler	0%	
Disc harrow small and medium size	0%	
Steering system and handle bar for rice planter	18%	

1. (4-a) Mechanization: List of machineries to be domestically manufactured beyond 10 years [3/4]

Machineries/ Implements (accessories)	Current Import Tariff & VAT	Why, if changed the category? (Advantages)
Tires	18%	
Power tiller clutch	18%	
Batteries	18%	
Electric network	18%	
starter	18%	

1. (4-a) Mechanization: Outline of the strategies for manufacturing [4/4]

i) Capacity building

What engineering skills and business skills are needed for the manufactures to be successfully and sustainably operational?

- Engineering skills: engineering drawing, mechanical engineering, electromechanics, theory of machines, etc.

- Business skills: accountancy skills, marketing skills, cooperation skills, etc.

Who are the existing local manufactures that are adequate for such capacity training?

[Manufacturers List](#)

How should the government, with the assistance of the public / private sector of other countries, provide such capacity building opportunities to those manufactures?

Study tours, internships, incubation centers, Trainings, etc.

ii) Infrastructure development

What type of infrastructure, AS THE PUBLIC GOODS, is needed to support the development of the private manufacturing industry?

Electricity, roads, equipped workshops, incubation centers, etc.



Local manufacturers in Rwanda

N	Manufacturers	Location	Observations
1	Metal Work Solutions LTD	Kigali	Able to manufacture Maize shellers, Rice threshers, winning/cleaning machines, personal trained with KIST
2	Atelier des Performance Technique	Kigali	Able to manufacture Maize shellers, Rice threshers, winning/cleaning machines, personal trained with KIST
3	ECONTEC	Kigali	10 Maize shellers are manufactured for Cooperatives, able to make any others post harvesting equipments
4	TOTRATEC LTD	Rwamaga	85 Rice threshers for cooperatives and individual farmers, able to manufacture other equipments
5	T. Philemon	Kigali	Powered machines for rice and maize, ...
6	Urugaga Imbaraga	Musanze	Manual tools, maize shellers, wheat threshers.....
7	Chillington	Kigali	Manufacturing of different mechanical components for local end East African Community, feed cater, Pumps body, Pipes junctions, transportation means..
8	M. Pontien	Nyagatare	Shelling, cutting, chopping machines

1. (4-a) Mechanization: Outline of the strategies for manufacturing [4/4]

iii) Policy tools (interventions)

What policy tools are required to support launching and maintenance of the manufacturing business?

- Reduced import duties for raw materials
- Engineering standard
- SME promotion including loans
- Enforce appropriation and standardization of machineries being locally manufactured
- Reduce/tax for raw materials for manufacturing farm machineries and implements
- Promote close collaboration between R&D units, higher institutions and local manufacturers

iv) Drivers for change

Who are the persons that are best positioned to drive the process.

They may come from any sector, must be prepared to understand the intricacies of the whole adoption chain and be in a position to engage other stakeholders and thus move things forward:

Minister of Agriculture, Minister of education, Minister of infrastructure , Minister of trade and industry

1. (4-b) Mechanization: Testing and certification [1/3]

Identify the current status/problems in:
Testing institution for Agri-Machines is not available
i) Organizational structure;
On going proposal for testing and certification
ii) Regulation for test of quality/ inspection or certification;
RBSbut not yet for agricultural machinery
iii) Facilities
Policy proposal for Fees reduction, capacity building etc...
iv) Human resources
Currently TF I & M is testing the performance of some equipment to know if they are able to fit in local land conditions

1. (4-b) Mechanization: Testing and certification [2/3]

Recommended testing items (machineries, implements, accessories/spare parts) which can be conducted domestically:
v) in 3 years;
Equipment manufactured locally, Power tillers and attachment, rice planting machine, crop treatment machines...
vi) in 10 years;
Rice combine harvesters..
vii) beyond 10 years;
Tractor and agro processing unites (Certification)

1. (4-b) Mechanization: Testing and certification [3/3]

Road Maps (who to do what, when) :
viii) Improvement of existing organizational structures, or if impossible, launching new organizations;
Mechanization National Center of Rwanda (2013-2014)
ix) Development of required minimum facilities with different time horizons;
Infrastructure improvement-2013, Internal equipment 2014
x) Recruitment of appropriate human resources and provision of training; and
Recruitment and trainings should be organized by mid 2014
xi) Linkage with international organizations
Beginning of 2015 International cooperation

1. (4-c) Mechanization: Matching Farm Equipment to Farm Size - Tractors [1/3]

10 selected Steps out of 34	2 wheel	4 wheel
1. Area covered (ha)	10.00	40.00
10. Equipment sizes available (metre)	0.50	1.00
12. Draft (kN/m)	4.00	7.00
18. Purchase price of tractor (\$)	3,500.00	20,000.00
20. Purchase price of plow (\$)	150.00	2500.00
28. Total Operating Cost (\$/hr)	7.50	23.00
31. Total Fixed Cost (\$/hr)	5.98	24.58
32. Total Cost/hr (\$/hr)	11.15	47.58
33. Cost/ha (\$/ha)	44.60	47.58
Contract Rate (\$/ha)	49.06	52.34

1. (4-c) Mechanization: Matching Farm Equipment to Farm Size - Combines [2/3]

10 selected Steps out of 34	Small	Medium
1. Area covered (ha)	50.00	200.00
10. Equipment sizes available (metre)	1.80	3.00
12. Draft (kN/m)	4.00	8.00
18. Purchase price (\$)	20,000.00	60,000.00
28. Total Operating Cost (\$/hr)	27.00	53.00
31. Total Fixed Cost (\$/hr)	33.33	80.00
32. Total Cost/hr (\$/hr)	60.33	133.00
33. Cost/ha (\$/ha)	60.33	66.50
Contract Rate (\$/ha)	78.43	86.45

1. (4-c) Mechanization: Matching Farm Equipment to Farm Size - Rice Mills [3/3]

10 selected Steps out of 34	Small	Medium
1. Volume Milled (tons/year)	500.00	1,000.00
10. Equipment sizes available (kg/hr)	500.00	1,000.00
18. Purchase price (\$)	55,000.00	120,000.00
28. Total Operating Cost (\$/hr)	5.21	9.50
31. Total Fixed Cost (\$/hr)	4.13	9.00
32. Total Cost/hr (\$/hr)	9.33	18.50
33. Cost/t (\$/t)	22.40	22.20
Contract Rate (\$/t)	29.12	28.86

2. (1) Processing: Current Status of Rice Milling [1/3]

	Small <150kg/hr	Medium 150-300kg/hr	Large >300kg/hr
Number of mills present	100	50	10
Main source of paddy	Individual Farmers	Traders, Cooperative	Cooperatives, Out grower schemes
Mainly sell the milled rice to?	No sales/ rural shops/ brokers	Retail/ wholesalers	Exporters/ wholesalers
Major problems?	% of broken grains, de-husking, Stones, etc	Color (polishing)	Purity (mixtures)

2. (2) Processing: Current Market Situation [2/3]

	Urban	Rural
Total Volume (tons)	116000	
% of local rice	20%	50%
Grades of the most popular rice	2	2
Price of the most popular rice (\$/kg)	1.1	1.4
Import Tariff (%)	20%	20%
Price difference between local and imported rice of same type (%)	16%	5%
Consumers' preference	Short and bold (Japonica), long and medium/slender types (indica)	

2. (3) Processing: Standard and Grading System [3/3]

Any law/ policy on 'grading system' for rice sold in the markets?

There are no clear written regulations on milling operations

If yes, which grades and how?

Small mills in marshlands generally produced Grade 3 rice. The government has recently banned such mills and has approved only those mills that can produce a minimum of Grade 2 rice (NRDS)

Institutional Capacity: Which institution(s) is responsible for implementing milling standards and grades of rice sold in market?

Rwanda Bureau of Standard (RBS)

What are the limitations in implementation of grades and standards?

Compliance, awareness, human resources, technical difficulties, lack of policies....

Thanks



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