PROGRESS WITH AGRICULTURAL MECHANIZATION IN MADAGASCAR

SUMMARY

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3. CURRENT SITUATION/ CHALLENGES TO STRONG MECHANIZATION
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1-EVENT TIMETABLE

Dates	Action taken since March 2012
22 May	Meeting: Presentation to department heads at the Ministry of Agriculture on CARD, the NRDS and Mechanization
25 May	1st Core Group meeting (group TOR, working methods, look at policy tool matrices, techniques, key members of the value chain)
04 to 08 June	Week set aside for launch workshop preparation (core group)
11 to18 June	Preparation finalization
19 June	Launch workshop

1-EVENT TIMETABLE

Date	Action taken since March 2012
20 June	Task Force meeting, including CARD Secretariat
18,30,14 August, 22 August, 29 August	Enlarged Task Force meetings: conferencing with the Private Sector and representatives from Customs and the Tax Directorate,
17 to 29 Sept.	Various interviews Field visit to consult artisans and other stakeholders
03 to 21 October	Preparation for the 2nd Regional Workshop
22 to 24 October	Regional Workshop in Kenya
November-December 2012-mid-January 2013	Refining the rice mechanization strategy–Preparation for the GM5 presentation on rice mechanization
29 January 2013	National validation

2-LIST OF PARTICIPANTS

[ENLARGED TASK FORCE]

Name	Post	Organization
1.RAKOTOSON Solofonirina	Trade executive	SCAA SARL SP
2.HOAREAU M. Marcelline	Director, Sofia Rural Dev. Prog.	Aga Khan Foundation SP
3.RANDRIANARIVELO Andry	Executive secretary	GSRI SP
4.RAMIARAMANANTSOA Andriandrandrainarivo	Assistant to the Director	DGR/MINAGRI P
5.RAKOTONDRAINIBE Andry	Research officer	UPDR P
6.RAKOTOARIVELO Anicet	Director	ZINA Ambatondrazaka workshop SP
7.RAKOTOSON Frantony	Adminstrative and Finance Director	BRL Madagascar and STE ROSTAING SP
8.RAKOTONDRAZAKA Herman	Tax Inspector with Research and Drafting responsibilities	Research and Fiscal Legislation Directorate MFB
9.RANDRIATSIMIVONY Basile	Director of AFMA manufacturing company	Farm Machinery Manufacturing Workshop SP

2-LIST OF PARTICIPANTS (cont.)

[ENLARGED TASK FORCE]

Name	Post	Organization
10.RAKOTOMALALA Fenosoa	Farm equipment executive	Compagnie Madecasse (supplier) SP
11.RATOVOSON Mamy Ny Aina	Technical Adviser Min. Agric.	MINAGRI P
12.HERINDRANOVONA Augustin	Commercial Director	AGRIVET (concessionnaire) SP
13.RAKOTOSAMIMANANA Angelo	Commercial Director	SYSTEC (concessionnaire) SP
14.ANDRIAMALALA Richard	Tax Inspector with Research and Fiscal Drafting responsibilities	Tax Directorate -DELF MiniFB P
15.RATSIMBAHARISON Alain	Technical Secretary	Rice Dialogue Platform (PCP-RIZ/SCAA) SP
16.RAZAFINDRASOA Hélène	Chairman of monitoring committee	FEKRITAMA SP (Farmers' confederation)
17.RAMANANKATSOANA Laurence Louisa	Head, Food Security Project	SAF/FJKM (ONG) SP
18.RAKOTOMANGA Samuel	Union executive – CA Member)	SOA network (farmers' apex organisation) SP

3- CURRENT SITUATION

3.1-Access to powered machinery
Two-wheel tractors (power tillers)

IMPORTERS	TYPES	UNIT PRICE in USD	SIZE OF MARKET
10	10 hp	1300	1000 POWER TILLERS EACH YEAR making 2,000,000 DOLLARS EACH YEAR
	12-13 hp	1700-3000	
	15 hp	1750	
	17-18 hp	2000	
	20-22 hp	2200	

3.2- Access to powered machinery
FOUR-WHEELED TRACTORS (TRACTORS)

TYPES	80-82 hp
UNIT PRICE	30,000 USD
IMPORTERS	10
ANNUAL IMPORTS	50-100
INTEREST RATE	14%
IMPORT DUTIES AND TAXES	105
HIRING COST	20 USD PER HOUR

4-MAIN PROBLEMS

TECHNICAL ASPECTS:

- Low farmer capability to use and manage farm machinery
- Limited choice of suitable machinery (task specific)
- Lack of qualified personnel or a mechanization training institute
- Lack of maintenance and servicing provision

MAIN PROBLEMS (cont.)

POLICY ASPECTS:

- Weak producer financial strength
- Lack of extension services
- Poor geographic coverage by financial institutions, cumbersome procedures
- Absence of any policy or coordination for parties with an interest in the mechanization sector
- Few farm machinery suppliers
- Existing constraints (small size of plots and farms, topography) to a land use policy.

MAIN PROBLEMS

- Non-existence of testing and certification, non-application of standards
- Difficult access to credit and finance
- Investment Code out of date

5-RESULTS

- **VALIDATION WORKSHOP FOR THE *"STRATEGY DOCUMENT AND OPERATING PLAN"* 29 JANUARY 2013**

  comprising three strategic axes:

  - ***AXIS 1 : IMPROVEMENT OF USER ACCESS TO FARM IMPLEMENTS***
    - Identification of machinery that can be built within 3 years, 10 years and in more than 10 years
  - ***AXIS 2 : STRENTHENING PRIVATE SECTOR INVOLVEMENT IN THE RICE MECHANIZATION SECTOR***
  - ***AXIS 3 : STATE INSTITUTIONAL AND SOCIO-ECONOMIC SUPPORT***
    - Testing and certification body: strengthening the National Center for Training and Farm Machinery.
    - Ensure availability of suitable equipment

5.1-CHANGE-RELATED POLICY TOOLS

- Proposed policy step: strengthen the CFAMA as a testing and certification body
- Changes:

- Assure the conformity and quality of equipment reaching producers.
- Adapt to local requirements and standardize imported machines and locally made machinery.

Target:

- Importing agents (machines and spare parts)
- Local artisans (raw materials)
- Service providers and producers

5.1-CHANGE-RELATED POLICY TOOLS

Tools

- Circularize the steps involved in testing, evaluation, certification and meeting standards
- Strengthen CFAMA in testing, evaluation homologation of equipment

Steps:

- Equipment provision
- Capacity building and recruitment
- A study of standards to be applied

5.2-CHANGE-RELATED POLICY TOOLS

- Suggested policy step: enable sufficient suitable equipment
- Change: Ensure availability of region-specific equipment on the basis of soil type, holding size and the socio-economic conditions of the users, importers and retailers.
- Steps: carry out a more accurate study in addition to pre-sizing machinery requirements

5.3-CHANGE-RELATED POLICY TOOLS

- Suggested policy step: identification of equipment for local manufacture within 3 years, 10 years, more than 10 years
- Change: ensure availability and quality improvement, better trained local artisans.
- Steps: fine-tune identified equipment through on-site trialing.

5.3-CHANGE-RELATED POLICY TOOLS

- Suggested policy step: recruit the necessary qualified staff and train stakeholders on the rice value chain
- Change: assure the quality of machinery produced, producers trained to use and manage modern machinery
- Steps: carry out training for all stakeholders

6-TRAINING FOR EACH STAKEHOLDER GROUP

- **LOCAL MANUFACTURERS**

- TECHNICAL AND FINANCIAL CAPACITY BUILDING: STANDARDS AND QUALITY, FORGING AND METAL WORK, BUSINESS MANAGEMENT.
- STRENGTHEN MARKETING AND ADMINISTRATIVE MANAGEMENT
- LITERACY

- **IMPORTERS**

CAPACITY BUILD ON AFTER-SALES SERVICE AND GOVERNMENT CONTRACT PROCEDURES (MEETING SPECIFICATIONS)

6-TRAINING FOR EACH STAKEHOLDER GROUP

- **Service providers and operators**

  Machinery management and maintenance, after-sales service

- **Producers**

  Training on maintenance, machinery handling and safe working rules

- **Technicians**

- Staff from the testing and certification body: training drivers and certified mechanics
- Training engineers in design and as farm machinery instructors.

7. OUTLOOK: TECHNICAL PLAN

Identification of suitable machinery (equipment)

- CFAMA accreditation, set up the infrastructure and recruit staff
- Capacity build for testing and certification (both institutionally and in human resources)
- Improvement/acceleration of the plan to promote local production of farm equipment and machinery
- Capacity build maintenance and repair services in rural areas

Guidance:

7.OUTLOOK: POLICY PLAN

- Policy advocacy: at Ministerial level for Agriculture, Trade, Finance and Budget, and Industry because the strategy will be regulated by a Government order in council
- Implementation of Change policies to improve the rice sector mechanization environment
- Private sector requirement (voice): establish a platform for private sector involvement in mechanization
- Look for funding
- Monitoring & Evaluation

Guidance:

IRRIGATED RICE

Farming operation	Farm machinery				
	1 Manual	2 Draft Animal	Powered		
			3 Small (< 5 hp)	4 Medium (5 to 25hp)	5 Large(> 25 hp)
1. Transport and manure spreading	- Shovel, wheelbarrow	Cart	-	Rotary tiller and mini tractor and trailer	Tractor and trailed spreader
2. Soil working (1st tillage)	Angady, pick	Plow		Rotary tiller and mini tractor with plow	Tractor with plow
3 Mineral fertiliser spreading				Rotary tiller with fertilizer spreader	Tractor with fertilizer spreader
4 Harrowing	Angady	Harrow	Auto Rotavator	Rotary tiller and mini tractor with rotavator	Tractor with discs
5. Puddling and leveling (puddling, 2nd tillage)	Leveler	Leveler		Rotary tiller with rotavator	Tractor with cage-wheels + toothed harrow
6. Transplanting	Slide	-	Transplanter	Transplanter	Transplanter
5. Husbandry: Weeding 1	Hoe	-	Rotary hoe	-	-
6. Husbandry: Weeding 2	Hoe	-	Rotary hoe	-	-
7. Husbandry: Weeding 3	Hoe	-	Rotary hoe	-	-
8. Husb.: chemical treatment	Sprayer	-	Sprayer/ Knapsack power duster	-	-

8- Machinery Adapted for Rice Growing Operations
Irrigated Rice (cont.)

Farm Operation	Farm machinery				
			Powered		
	1 Manual	2 Draft Animal	3 Small (< 5 hp)	4 Medium (5 to 25hp)	5 Large(> 25 hp)
9.Mowing, pulverizing	scythe	mower	self-propelled mower	mower	mower, combine harvester
10. Threshing	thresher winnower		powered thresher	powered thresher	combine harvester, powered thresher
11. Winnowing	thresher winnower		powered winnower	powered winnower	powered winnower, combine harvester
12. Drying	dryer			dryer unit	dryer unit
13 Milling	pestle	grinding mill	husker, straw remover	husker, straw remover	husker, straw remover
14 Conditioning	electric sealer				
15. Storage			silo	silo	silo

9. Pre-Sizing of Adapted Machinery
(Example)

Soil preparation machinery	Holding size	Soil type	Characteristics		Power
			Working width	Weight	
Draft animal plow	0.1 – 0.5 ha	Light soil	20 to 25 cm	20 – 25 kg	
Rotary tiller plow	0.1 – 1 ha	Medium soil	25 cm (single furrow)		10 hp
Tractor plow	> 5 ha	Heavy soil	70 cm to 105 cm (2-furrow or 3-furrow)		80 hp

PRE-SIZING OF ADAPTED MACHINERY (CONT.)

PRE-SIZING OF FARM MACHINERY (*)

Implements list	Region 1		Region 2		Region 3		Region 4		Region 5		Region 6		Region 7		Region 8		Region 9		Region 10	
	L (m)	P (CH)	L (m)	P (CH)	L (m)	P (CH)	L (m)	P (CH)	L (m)	P (CH)	L (m)	P (CH)	L (m)	P (CH)	L (m)	P (CH)	L (m)	P (CH)	L (m)	P (CH)
Draft plow	0.7	70	0.25	20	1.05	80	0.25	20	0.7	70	0.5	30	0.7	70	0.25	20	1.05	80	0.7	70
Draft rotavator	1.7	70	0.7	20	2	80	0.7	20	1.7	70	0.7	20	1.7	70	0.7	20	2	80	1.7	70
Roller/Harrow	2	70	1.2	20	1.5	80	1.2	20	2	70	1.2	20	2	70	1.2	20	1.5	80	2	70
Draft drill	2.1	70	1	20	2.1	80	1	20	2.1	70	1	20	2.1	70	1	20	2.1	80	2.1	70
Powered weeder	0.7	1	0.7	1	0.7	1	0.7	1	0.7	1	0.7	1	0.7	1	0.7	1	0.7	1	0.7	1
Sprayer	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Powder duster	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Mechanical mower	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3
Powered thresher	1	7	1	7	1	7	1	7	1	7	1	7	1	7	1	7	1	7	1	7
Mechanical winnower	1	7	1	7	1	7	1	7	1	7	1	7	1	7	1	7	1	7	1	7
Powered pump	0.2	4	0.2	4	0.2	4	0.2	4	0.2	4	0.2	4	0.2	4	0.2	4	0.2	4	0.2	4
Husker	1.2	15	1.2	15	1.2	15	1.2	15	1.2	15	1.2	15	1.2	15	1.2	15	1.2	15	1.2	15
Grader	1	7	1	7	1	7	1	7	1	7	1	7	1	7	1	7	1	7	1	7

** That can be manufactured locally within 3 years*

This pre-sizing can be adapted to suit specific sub-regional requirements

L (m) : working width in "metres" - P (CH) : Engine power in "horsepower"

Agroecological regions:

Region 1 : North
Region 2 : North-east
Region 3 : Middle East
Region 4 : South East
Region 5 : High Northern Plain
Region 6 : High Southern Plain
Region 7 : North West
Region 8 : Middle West
Region 9 : Center West
Region 10 : South and South West

THANK YOU FOR YOUR ATTENTION!