Appendices

APPENDIX-1 MEMBER LIST OF THE STUDY TEAM

1-1 Basic Design Study

Task	Name	Organization
Leader	Makoto YAMASHITA	Team Director, Middle East II and Europe Team, Regional Department V (Middle East and Europe), JICA
Chief Consultant/ O&M plan	Wataru SHIGA	UNICO International Corporation
Training plan	Dr. Yasuo SHIBATA	UNICO International Corporation
Equipment/facility plan	Katsuhiko HIGUCHI	UNICO International Corporation
Procurement plan/ cost estimation	Mutsumi TABE	UNICO International Corporation
Interpreter (Japanese-Romanian)	Shigehito SHIGA	UNICO International Corporation

1-2 Explanation of Draft Report

Leader	Tetsuji IIDA	Senior Project Administration Officer, Project Monitoring and Coordination Team, Administration and Coordination Group, Grant Aid Management Dept., JICA
Chief Consultant	Wataru SHIGA	UNICO International Corporation (Consultant)
Equipment Planner	Katsuhiko HIGUCHI	UNICO International Corporation (Consultant)
Interpreter (Japanese-Romanian)	Shigehito SHIGA	UNICO International Corporation (Consultant)

APPENDIX-2 STUDY SCHEDULE

1. Basic Design Study

Sr. No.	Date (2007)	Day	Official (JICA)	Consultants				
			Team Leader M. Yamashita	Chief Consultant W. Shiga	Interpreter S. Shiga	Training Planner Y. Shibata	Equipment Planner K. Higuchi	Procurement M. Tabe
1	2/18	Sun		*Lv. Narita - Ar. Kiev (via Vienna)*				
2	2/19	Mon		Courtesy call to EOJ, *Lv. Kiev - Ar. Chisinau (via Budapest)*				
3	2/20	Tue		Discussions at PIU (2KR), survey of project site (NTCAM)				
4	2/21	Wed		Discussions at PIU & MAFI, discussion with sub consultant for Needs Survey, visit "Agrofermotech", "Autoprezent"				
5	2/22	Thu		Discussions at PIU, courtesy call to MOET, visit "Agropiese"				
6	2/23	Fri		Visit State Agrarian Univ., Technical Univ., discussion at PIU				
7	2/24	Sat		Discussions at PIU				*Lv. Narita - Ar. Vienna*
8	2/25	Sun		Data analysis				*Lv. Vienna - Ar. Chisinau*
9	2/26	Mon		Site visits (Agr. Tech. Colleges in Svetlii, selected agricultural producers, farm mechanization service providers - located on the way)				
10	2/27	Tue		Visit "TRACOM", "MECAGRO"				
11	2/28	Wed		Site visits (Agr. Tech. Colleges in Soroca, selected agricultural producers, farm mechanization service providers - located on the way)				
12	3/1	Thu	*Lv. Bucharest - Ar. Chisinau*	Discussion at PIU, meeting with Local Consultant			Discussion at PIU, visit forwarders	
13	3/2	Fri	Internal Meeting; Discussion at PIU	Internal Meeting; Discussion at PIU				
14	3/3	Sat	Site visits	Site visits ("Agropiese", "Nepura", "Ghertcom Agro"				
15	3/4	Sun	Discussion at PIU	Discussion at PIU				
16	3/5	Mon	Courtesy call to MOET, Take over ceremony at PIU	Courtesy call to MOET, Take over ceremony at PIU, Visit "Ecoplantera"				
17	3/6	Tue	Discussion on the Minutes	Discussion on the Minutes				
18	3/7	Wed	Signing the Minitues at MAFI; *Lv. Chisinau - Ar. Kiev (via Vienna)*	Signing the Minitues at MAFI; discussion at PIU				
19	3/8	Thu	Data Analysis	Discussion at PIU			Discussion at PIU, Market survey	
20	3/9	Fri	Report/discussion at EOJ	Discussions at PIU, State Testing Station			Discussions at PIU, Costing data collection	
21	3/10	Sat	*Lv. Kiev - (via Frankfurt)*	Discussions at PIU, Service agents			Discussions at PIU, Costing data collection	
22	3/11	Sun	*Ar. Narita*	Data analysis		*Lv. Chisinau - Ar. Vienna*	Data analysis	*Lv. Chisinau - Ar. Vienna*
23	3/12	Mon		Discussion at PIU, Visit "TRACOM", "Agromasina"		*Lv. Vienna -*	Discussion at PIU, Visit "TRACOM", "Agromasina"	*Lv. Vienna -*
24	3/13	Tue		Discussions with other donors (FAO, IFAD, EU, CNFA)		*Ar. Narita*	Discussions at PIU	*Ar. Narita*
25	3/14	Wed		Discussions at PIU			Discussions at PIU	
26	3/15	Thu		*Lv Chisinau - Ar. Kiev (via Budapest)* , Report to EOJ			Add. Study; *Lv. Chisinau - Ar. Vienna*	
27	3/16	Fri		*Lv. Kiev - (via Vienna)*			*Lv. Vienna -*	
28	3/17	Sat		*Ar. Narita*			*Ar. Narita*	

Abbreviations :

EOJ Embassy of Japan in Ukraine
MEC Ministry of Economy and Commerce
MAFI Ministry of Agriculture and Food Industries
NTCAM National Training Center for Agricultural Mechanization

2. Explanation of Draft Report

Sr. No.	Date (2007)	Day	JICA Official	Counsultant		
			Team Leader	Chief Consultant	Equipment Planner	Interpreter
			T. Iida	W. Shiga	K. Higuchi	S. Shiga
1	8/3	Fri		*Lv. Narita 10:55 →Ar. Vienna 18:05*		
2	8/4	Sat		*Lv. Vienna 13:45 →Ar. Chisinau 16:30*		
3	8/5	Sun		Data Analysis		
4	8/6	Mon	*Lv. Narita 10:55 →Ar. Vienna 16:05/ Lv. Vienna 18:00 →Ar. Chisinau 21:10*	Explanation on the DBD Report at PIU		
5	8/7	Tue	Site Survey in Chisinau			
6	8/8	Wed	Discussion on the DBD Report & Minutes at PIU			
7	8/9	Thu	Courtesy calls to MEC (09:00-) & MAFI (10:00-), Signing the Minitues at MAFI, *Lv. Chisinau 18:20 →Ar. Kiev 19:35*			
8	8/10	Fri	Report to EOJ, *Lv. Kiev 17:20 →Ar. Vienna 18:20*			
9	8/11	Sat	*Lv. Vienna 14:05 →*			
10	8/12	Sun	*Ar. Narita 08:20*			

Abbreviations :

MEC	Ministry of Economy and Commerce, General Deparment of External Economical Cooperation
MAFI	Ministry of Agriculture and Food Industries
PIU	Project Implementation Unit (2KR)
EOJ	Embassy of Japan in Ukraine

APPENDIX-3　LIST OF PARTIES CONCERNED IN THE RECIPIENT COUNTRY

<Moldovan Organizations>

Ministry of Agriculture and Food Industry

Mr. Anatolie Spivacenco, Viceminister

Mr. Stefan Calacea, Viceminister

Dr. Petru Tataru, Chief of Mechanization Department

Ms. Diana Gherman, Consultant, Directorate for Analysis, Monitoring and Policy Evaluation

Ms. Cainareau Bmilia, Head, International Relations and Marketing Division

Ms. Veneamin Balan, Mass-media Relations

Ministry of Economy and Commerce (Trade)

Ms. Aurelia Sarari, Head, Division for Technical Assistance Coordination

Mr. Jon Lupan, Head, Division for Technical Assistance Coordination

Ms. Tatiana Udrea, Deputy Head, Division for Technical Assistance Coordination

Ms. Oxana Budish, Consultant

PIU-2KR

Mr. Valeriu Bulgari, Executive Director

Prof. Vasile Bumacov, Technical Director

Ms. Liliana Pelin, Monitoring and Evaluation Specialist

Ms. Stela Lisii, Chief-accountant

CCA（Business Advisory Center）

Mr. Aurelian Rotaru, Project Manager

Moldovan Testing Station（Statia de Stat Pentru Incercarea Masinilor）

Mr. Moloduc Vladimir, Director of the Testing Station

State Agrarian University

Prof. Serbin Vladimir, Chief of chair "Agricultural machinery"

Prof. Dumitru Novorojdin, Chief of chair "Tractor and automobile"

Technical University of Moldova

Prof. Vasile Ajder, Head of Department Agricultural Machine Design and Manufacturing

Mr. Guzun Mihai, Mentenance

Mr. Nastas Andrei, Masini Aglicole Tractoare

Agricultural Technical College, Svetlii

Mr. Bauchin Valentin, Director

Mr. Getu Victor, Deputy Director

Agricultural Technical College, Soroca

Mr. Constantin Nesterenco, Director

Uniagroprotect (Farmers' Union)

Mr. Igor Vatamaniuc, Vice-president

(UAP: Republican Union of Agricultural Producers Associations)、

Mr. Ruslan Sintov, Executive Director

(CIVIS: Center of Sociological Politological and Psychological Investigation and Analysis)

Technical Center (Central Technic) Ceadir-Lunga

Mr. Iabanji Savelii

Plietenia Agro (Agricultural Farm)

Mr. Florea Alexei, President

Baurci (Agricultural Farm)

Mr. Popas Domitory George, Team Leader

Ghertcom Agro (Agricultural Farm)

Mr. Olesc Mithika, Director

Dacia Agrochim, Sirota Village (Orchard Farm, Fruit Sales)

Mr. Muravschi Valeriu, Consultant

Agro-Demisimus, Cucuruzenii de Sus Village (Farmers' Association)

Mr. Tiorsa Serghei, Director

Agrofermotec (Dealer of Farm Machinery)

Mr. Sergiu Sclifos, Director Executive

Agromasina (Manufacturer of Farm Machinery)

Mr. Nani Stefan, Director General

Agropiese (Dealer of Farm Machinery)

Mr. Oleg Golopeatov, Technical Director

Mr. Vlad Rosca

Alvar Service (Dealer of Farm Machinery)

Mr. Ion Panfilii, Engineer-Manager

Autoprezent (Dealer of Farm Machinery)

Mr. Orgetkin Vladimir Ivanovici, Director

Mr. Constantin Chebashev, General Manager

Ecoplantera (Dealer of Farm Machinery, Supplier of Seedlings)

Mr. Lisii Radu, Director

E.F.I. (Dealer of Farm Machinery)

Mr. Octavian Boubatrin, General Manager

Infina (Dealer of Farm Machinery)

Dr. Ion Olteanu, Director

Lion Gri (Winery)

Ms. Nellu Sonic, Vice-president

Moldagrotehnica (Manufacturer of Farm Machinery)

Mr. Petru Frunza, Director General, Anatolie Cheptanaru, Director 20 keys

Tracom S.A. (S.A. Uzina de Tractoare) (Tractor Manufacturer)

Mr. Suleimanov Alexandr Nicolai, Director General

Mecagro (Manufacturer of Farm Machinery)

Mr. Boris Gavrilenco, Deputy Director

Y.Y. Nepura (Farm Machinery Repair Shop)

Mr. Nepura Vasile, Director

Ecoplant-Sere (DAAC-Sere) (Agricultural Technology Developer)

Mr. Uncu Gheorghe, Director

Translogistic (Forwarder)

Mr. Cezar Palamarciuc, Head of Multimodal Forwarding Department

Mr. Bubnov Roman, Multimodal Forwarding Department

Transservice-M (Forwarder)

Mr. Matveen Alexander, Executive Director

Mr. Beleaev Ivan Isidrovici

Uni-Orient Shipping Agency (Forwarder)

Mr. Sezghei Darmaneev, Director

<International Organizations and Donors>

The Food and Agriculture Organization of the United Nations（FAO）

Ms. Diana Gherman, Consultant, FAO National Correspondent in Moldova

Mr. Ion Perju, Head of the Directorate of Analysis of Policies, MAFI

International Fund for Agricultural Development (IFAD）

Mr. Ion Russu, Director, Consolidated Programme Implementation Unit

European Union（EU）

Ms. Speranta Olaru, Project Manager, Trade, Economics & Agriculture, Delegation of the European Commission to Moldova

Citizen's Network for Foreign Affairs (CNFA) – Agribusiness Development Project（USAID）

Mr. Dennis Zeedyk, Deputy Chief of Party, USAID Implementing Partner

Mr. Victor Rosca, Agribusiness Development Advisor

<Japanese Organization>

Embassy of Japan in Moldova (Ukraine)

Mr. Mutsuo Mabuchi, Ambassador Extraordinary and Plenipotentiary

Mr. Daisuke Minamino, Second Secretary

Mr. Mykhaylo Skyba, Economist

MINUTES OF DISCUSSIONS ON THE BASIC DESIGN STUDY ON THE PROJECT FOR SUPPLY OF AGRICULTURAL TRAINING EQUIPMENT FOR THE NATIONAL TRAINING CENTER FOR AGRICULTURAL MECHANIZATION IN THE REPUBLIC OF MOLDOVA

Based on the results of the Preliminary Study, the Government of Japan decided to conduct a Basic Design Study on the Project for Supply of Agricultural Training Equipment for the National Training Center for Agricultural Mechanization (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to the Republic of Moldova (hereinafter referred to as "Moldova") the Basic Design Study Team (hereinafter referred to as "the Team"), which was headed by Mr. Makoto YAMASHITA, Team Director, Middle East II & Europe Team, Regional Department V, JICA and was scheduled to stay in the country from 19 February to 15 March 2007.

The Team held discussions with the officials concerned of the Government of Moldova and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Chisinau, 7 March 2007

Mr. Makoto YAMASHITA
Leader
Basic Design Study Team
Japan International Cooperation Agency
(JICA)

Mr. Anatolie SPIVACENCO
Deputy Minister
Ministry of Agriculture and Food Industry
Republic of Moldova

Mr. Vasile BUMACOV
Technical Director of PIU of 2KR
Ministry of Agriculture and Food Industry
Republic of Moldova

Mr. Valeriu BULGARI
Executive Director of PIU of 2KR
Ministry of Agriculture and Food Industry
Republic of Moldova

Ms. Aurelia SARARI
Head, Division for Technical Assistance
Coordination
General Department of External
Economical Cooperation
Ministry of Economy and Trade
Republic of Moldova

ATTACHMENT

1 Objective of the Project

The objective of the Project is to provide necessary equipment to conduct training at the National Training Center for Agricultural Mechanization located in Chisinau.

2 Project site

The Project site will be the National Training Center for Agricultural Mechanization located in Chisinau (hereinafter referred to as "the Center") and its location is described as Annex-I.

3 Responsible and Implementing Agency

3.1 The Responsible Agency is the Ministry of Agriculture and Food Industry (hereinafter referred to as "MAFI").

3.2 The Implementing Agency is Project Implementation Unit (hereinafter referred to as "PIU") of 2KR, MAFI.

3.3 The organization chart of MAFI is attached as Annex-II and the management structure of the Center is attached as Annex-III.

4 Items requested by the Government of Moldova

After discussions with the Team, the equipment described in Annex-IV were finally requested by the Moldovan side. JICA will assess the appropriateness of the request based on the assessment of the training curriculum as described in 7.1 below and will recommend to the Government of Japan for approval.

5 Japan's Grant Aid Scheme

The Moldovan side understood the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Moldova explained by the Team as described in Annex-V.

6 Schedule of the Study

6.1 The consultants will proceed to further studies in Moldova until 15 March 2007.

6.2 JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around July 2007.

6.3 In case that the content of the report is accepted in principle by the Government of Moldova, JICA will complete the final report and send it to the Government of Moldova by August 2007.

7 Other relevant issues

7.1 Training Curriculum of the Center

The Moldovan side explained that the final version of the training curriculum of the Center would be submitted to the Japanese side by 15 March 2007. All the requested equipment should be utilized for the implementation of the said curriculum. Therefore, the Japanese side will assess the appropriateness of the curriculum and report the findings to the Government of Japan.

7.2 The Construction Schedule of the Center

Both sides confirmed that the majority of the construction work had been completed and further confirmed the future schedule of the construction of the Center as shown in Annex-VI. The Moldovan side promised the Team to submit the certification of the completion of construction to JICA HDQ upon receipt, possibly by the end of May 2007.

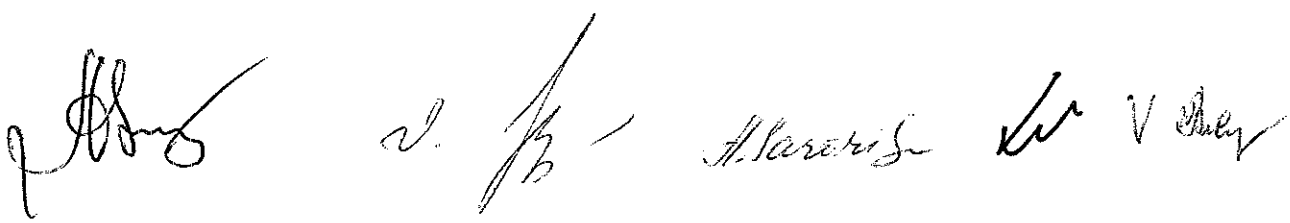
7.3 Operation and Maintenance of the Center

The Moldovan side explained that PIU of 2KR would operate and maintain the Center in both financial and technical aspects with ownership. MAFI will take all necessary measures including finance to secure the smooth operation of the Center as shown in Annex-VII.

7.4 Land matter

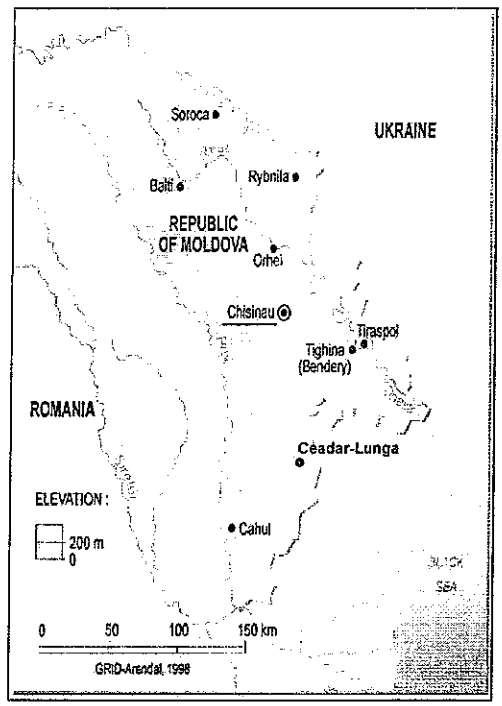
Both sides confirmed that the land where the Center was located, was State Agricultural Land and that the right to use of the land would belong to the Center. The document to verify the said affairs would be submitted to JICA HDQ possibly by the end of April 2007.

END

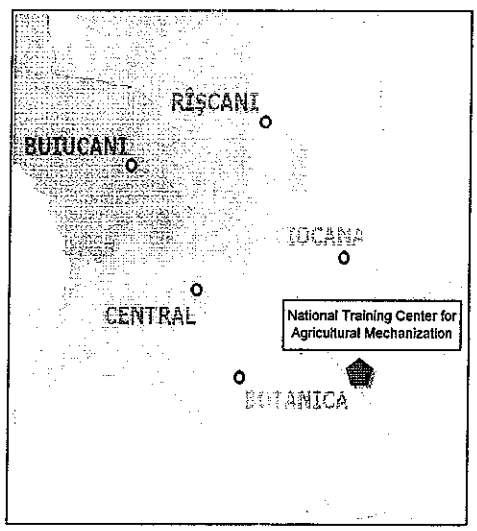


Annex-I

Location of the Project Site



Republic of Moldova



Chisinau City

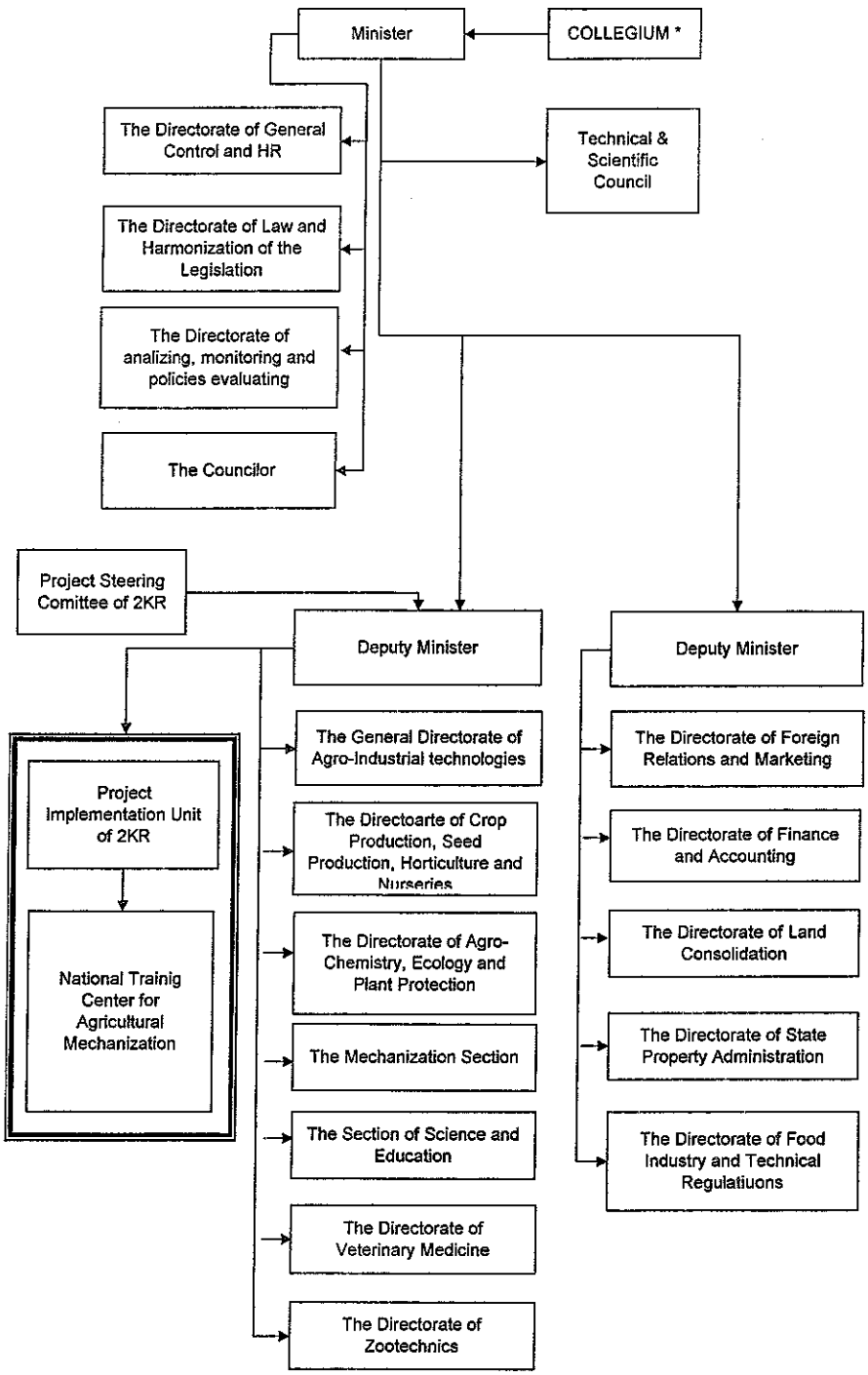
Project Site
National Training Center for Agricultural Mechanization
Address: Calea Basarabiei str. 18, Chicinau, MD-2023, Republic of Moldova

Implementing Agency
Project Implementation Unit of 2KR
Address: Calea Basarabiei str. 18, Chicinau, MD-2023, Republic of Moldova

Responsible Agency
Ministry of Agriculture and Food Industry
Address: 162, Stefan cel Mare str., Chisinau, MD-2004, Republic of Moldova

Annex-II

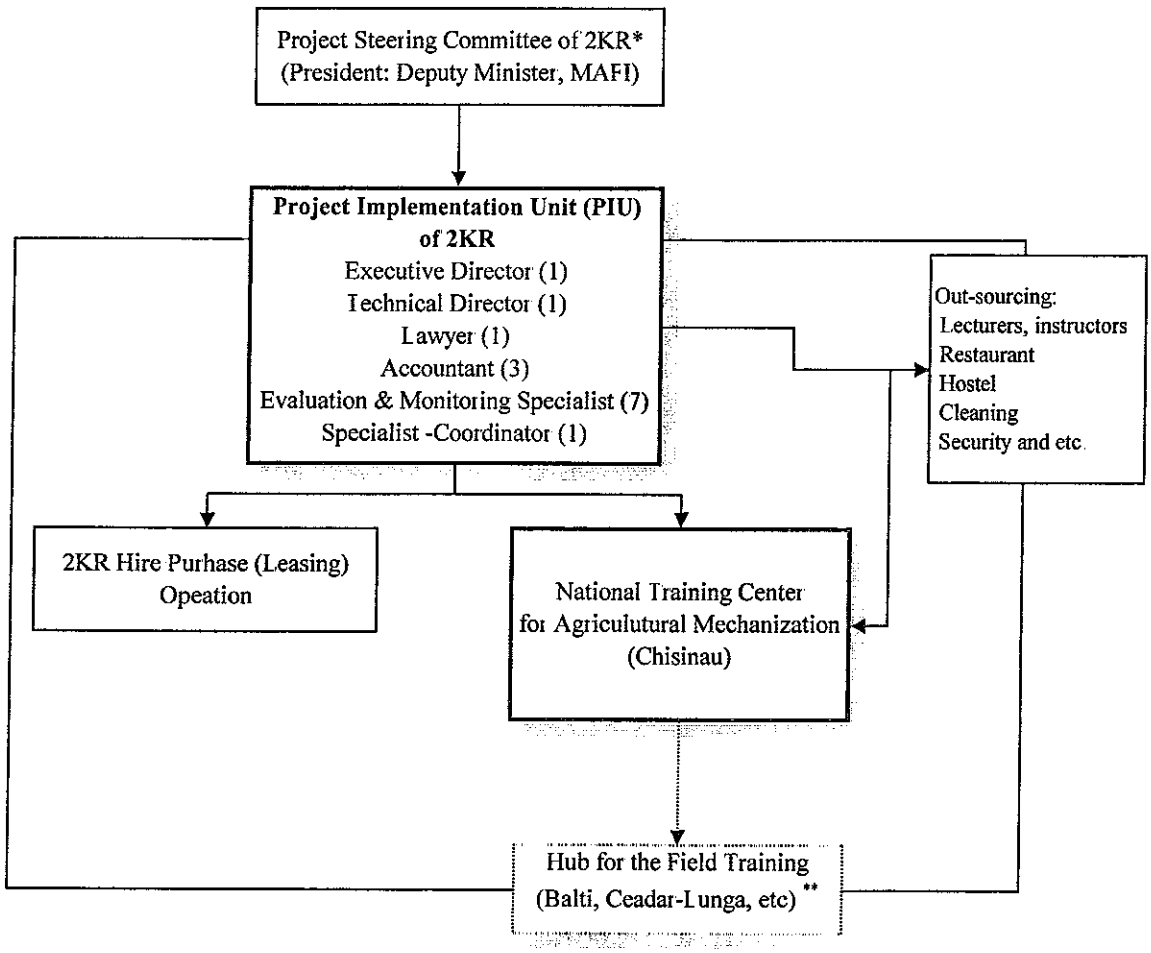
Organization Chart of the Ministry of Agriculture and Food Industry



* Ex Officio Members of the COLLEGIUM (Supervisory Board)
- Minister of Agriculture and Food Industry
- Deputy Minister of Agriculture and Food Industry
- Deputy Minister of Agriculture and Food Industry, responsible for the Land Consolidation
- President of the National Federation of Employers in Agriculture and Food Industry
- Head of General Directorate of Agriculture and Food of the Autonomous Territorial Unit Gagauzia
- Director of the Research Institute of Corn and Sorghum
- Academician, Coordinator of the Agricultural Sciences Section in the Academy of Sciences of Moldova
- Vice-Chairman of the Glodeni Region, Head of the Glodeni Directorate of Agriculture and Food
- Director General of SA "Tutun CTC"
- Chairman of the Agricultural Cooperative, Village Ciobalaccia, Region Cantemir
- President of SA "Balasinesti", Region Briceni
- Representative from the Student State Agrarian University of Moldova

Annex-III

Structure of PIU-2KR



*Members of the Project Steering Committee are listed as below:
- Deputy Minister of Agriculture and Food Industry (MAFI), President of the Steering Committee
- Consultant of the Mechanization Department, MAFI, Secretary of the Steering Committee
- Director General of the Department of Finance, National Economy and Capital Investment, Ministry of Finance
- Director General of the Department for Attraction and Coordination of External Technical Cooperation, Ministry of Economy and Trade
- Director General of the Mechanization Department, MAFI
- Deputy Chief of the Department of Finance and Accounting, MAFI
- Director of the Research Institute in the Field of Agricultural Mechanization "MECAGRO"
- Deputy Director General of the General Department of External Economic Cooperation, Ministry of Economy and Trade, Observer
- Director General of the Department of Cooperation of Financial Organizations, Ministry of Economy and Trade, Observer

** The location of the Hubs for the Field Training are provisional and to be confirmed.

Items requested by the Government of Moldova

NOTE ;

Priority A : Highly necessary and appropriate, suitable for the main objectives of the training at the Training Center, and appropriate as the equipment to be supplied through Japan's grant aid.

Priority B : Subject to consideration of necessity and appropriateness because it is less suitable for the main objectives of the training at the Training Center, or because it is not appropriate as the equipment to be supplied through Japan's grant aid.

Priority C : Less necessary or inappropriate.

*1 : In consideration of importance of the items, the Moldovan side requested to change the priority from "B" to "A".

*2 : PIU shall prepare supporting data, information etc. to explain necessity and importance of the item Priority and quantity of the item will be decided by the Japanese side based on the further examination of the said data.

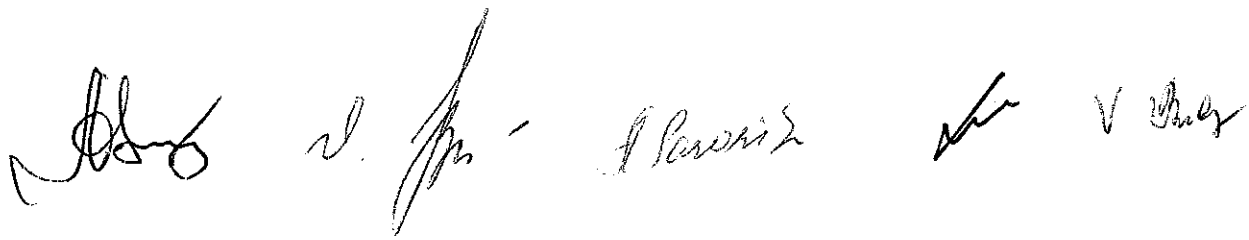
No.	Equipment	Quantity	Priority	Note
Component I – Workshop Training Equipment				
1. Washing Equipment				
1.1.1	Hot & cold water and steam combination washer	1	A	
1.1.2	Hot water high pressure washer	1	A	
1.1.3	Cold water high pressure washer	1	A	
1.2.1	Washing tank for special parts	1	A	
1.2.2	Oil service cabinet	1	A	
1.3.1	Jet parts washer	1	A	
1.4.1	Cleaning equipment with abrasive	1	A	
1.5.1	Parts rack	4	C	
1.6.1	Parts cleaner, 150 liter	1	A	
1.6.2	Water recycling cleaner unit	1	C	
1.6.4	Nozzle cleaning kit	1 set	A	
1.6.6	Jet multiple chisel	1	C	
1.6.7	Air blow gun	3	A	
1.8.1	Giraffe type crane	1	A	
1.9.1	Manual forklift	2	1B 1C	*1, *2
1.10.1	Washing container for parts washer	8	C	
2. Disassembling and Assembling Equipment				
2.1.1	Sling chain kit with wire rope	1 set	C	
2.1.2	Mobile work bench with vise	1	A	
2.1.3	Mechanic tool set, inch	4 sets	B	
	Mechanic tool set, mm	6 sets	B	
2.1.4	Hydraulic garage jack, 10 ton	2	A	
2.1.5	Transmission jack, 800kg	1	A	
2.1.7	Hydraulic shop press, 25 tons with push tools	1	A	
2.1.8	Set of Tools for Disassembling / Assembling Double-face sledge hammers Torque multipliers Wrenches Tinner scissors Adjustable reamers Grip pliers	1 set	B	
2.1.9	Service creeper	2	B	
2.1.10	Blocking tool, 10, 12 ton	1 set	C	
	Blocking tool, 35, 25 ton	1 set	C	
2.1.11	Air hose reel, 12mm x 10m	4	A	
2.1.12	Air impact wrench	4	A	

No.	Equipment	Quantity	Priority	Note
2.1.13	Portable lubricator for grease	4	2A 2B	
2.1.14	Portable lubricator for oil	4	A	
2.1.15	Grease gun with micro hose	2	1A 1B	
2.1.16	Oil drain	5	B	
2.1.17	Body Puller Set, Standard	1 set	B	
2.1.18	Body Puller Set, Large	1 set	B	
2.1.19	Body & Fender Tool Set	1 set	B	
2.1.20	Scissors lift	2	B	
2.1.21	Air hydraulic jack	1	A	
2.1.22	Differential gear jack	1	A	
2.1.23	Master pin remover	1	A	
2.1.24	Hydraulic hose crimping machine	1	A	
2.1.25	Forklift	1	B	
2.3.1	Set of tools for disassembling engines Spring pusher Piston ring tool Torque multiplier Torque wrenches Piston holder set Piston heater Air blow gun Nozzle and injector puller	2 sets	A	
2.4.1	Hydraulic shop press (100t)	1	A	
2.5.1	Overhead crane	1	A	
2.10.1	Puller / hydraulic puller / hydraulic gear puller set	2 sets	A	
2.12.1	Portable hydraulic jack	4	B	
2.13.1	Parts rack	4	C	
2.13.2	Tool Storage Cabinet	5	C	
2.16.1	Parts wagon, 1000 kg	3	B	
2.16.2	Parts rack for small parts	2	C	
2.17.1	Work bench, 1500 mm with vise 200 mm	15	A	
3. Testing and Running Equipment				
3.1.1	Cylinder head hydraulic test stand	1	A	
3.1.2	Portable Hydraulic Tester with accessories	1	A	
3.1.3	Hydraulic Pressure Gauge Set, 60MPa	1 set	A	
3.1.4	Flowmeter Set	1	C	
3.3.1	Balancing Test Bench for Turbo Charger	1	A	
3.5.1	Multi Purpose Vacuum Tester	1	A	
3.5.2	Diesel Injection Pump Tester	1	A	
3.6.1	Nozzle Tester	1	A	
3.10.1	Cylinder Gauge, 35-60, 50-100, 100-160mm	1 set	A	
3.10.2	Valve Spring Tester, cap.120kg	1	A	
3.10.3	Engine Dynamometer with accessories	1	A	
3.10.4	Diesel Compression Gauge set	1 set	A	
3.10.6	Stop Watch	1	C	
3.10.7	Diesel timing and tacho tester	1	A	
3.10.8	Computerized engine analyzer	1	B	*1, *2
3.10.9	CO-HC exhaust emission analyzer	1	A	
3.10.10	Cylinder head and cylinder block pressure tester	1	A	
3.12.1	Wheel alignment tester set	1	A	
4. Selection and Control Equipment				
4.1.1	Fiberscope	1	A	
4.1.2	Battery and coolant tester	1	B	
4.1.3	Diesel smoke meter	1	A	

No.	Equipment	Quantity	Priority	Note
4.3.1	Set of measuring tools Square, Steel compass, Surface gauge Thickness Gauge Screw pitch gauge, etc.	1	C	
4.4.1	Set of measuring instruments Dial indicator Hand spring balance Cylinder gauge Hand tachometer	1 set	B	*1, *2
4.5.1	Inside, Outside Micrometer and Caliper Set	5	C	
4.12.1	Magnetic Flaw detector	1	A	
4.12.2	Magnetic Crack detectors for crankshafts	1	A	
4.13.1	Ultrasonic Flaw detector with accessories	1	A	
4.14.1	Connecting rod aligner	1	A	
4.17.1	Parts Rack	4	C	
4.17.2	Parts Rack with Drawer	2	C	
5. Electrical Equipment Reparation Equipment				
5.1.2	Parts Rack	2	C	
5.1.3	Tool Storage Cabinet	2	C	
5.1.4	Silicon Quick Charger, 100A	1	A	
5.2.1	Battery Tester, 200AH	1	A	
5.2.2	Digital Multimeter for automotive with accessories	3	2A 1B	
5.3.1	Battery service tools	2 sets	B	
5.3.2	Battery Hydrometer Set	2 sets	B	
5.4.1	Electric system tester and tools set Circuit tester Electricians tools Cam angle & tacho tester Coil condenser ohm tester	1 set	B	
5.5.1	Hand Truck, 300kg	2	C	
5.6.1	Starter Generator Test Bench with accessories	1	A	
5.7.1	Plug Cleaner and Tester	1	A	
5.7.2	Electronic ignition spark tester	1	B	
5.10.1	Electric Soldering Iron :100 W	2	C	
5.10.2	Thread Type Solder with Flux	2	C	
6. Mechanical and Locksmith Equipment				
6.1.1	Work bench, 1500 mm with vise 200 mm	2	A	
6.2.1	Crankshaft Grinder	1	B	*1, *2
6.2.2	Crankshaft Straightening press	1	B	
6.2.3	Crankshaft Support	2	B	
6.4.1	Surface Grinder (Flat-grinding Machine)	1	B	
6.5.1	Parts rack	10	C	
6.6.1	Chisel and punch set	1	C	
6.7.1	Ball peen / plastic / test / copper / wooden hammer	10	B	
6.8.1	Bench Lathe with accessories	1	A	
6.9.1	Drilling Machine 40mm, radial	1	A	
6.9.2	Cylinder Boring & Milling Machine	1	B	*1, *2
6.9.3	Cylinder Honing Machine	1		*1, *2
6.9.4	Line boring machine	1	B	
6.9.5	Boring bar	4	B	
6.9.6	Micro hone	4 sets	B	
6.10.1	Honing set, 85-165mm dia.	1 set	B	
6.10.2	Hack Sawing Machine with accessories	1	B	
6.10.3	Bench Drill Press, 13mm	1	A	
6.10.4	High-Speed Abrasive Cut-off Machine, 405mm	1	B	
6.10.5	Universal Milling Machine with accessories	1	A	

No.	Equipment	Quantity	Priority	Note
6.11.1	Drill Chuck & Handle	2	C	
6.11.2	Drill Press Vise	2	C	
6.12.1	Tap Set	10	C	
6.12.2	Tap holder & dies handle	1	C	
6.12.3	Screw plate	1	C	
6.13.1	Die Set	6	C	
6.14.1	Gas welder set with carrier (CO_2)	1	A	
6.14.2	Gas Welder Set (Argon)	1	A	
6.15.1	DC Arc Welder, 300A with accessories	1	A	
6.15.2	Electrode Drier, 100kg cap.	1	A	
6.16.1	DC Arc Welder with TIG Welding Device	1	A	
6.16.2	Engine welder	1	A	
6.17.1	Electric drill	4	B	
6.18.1	Metal cutter	2	B	
6.28.1	Valve True Gauge (Device for Measurement of Valve)	1	A	
6.29.1	Injector reconditioning machine	1	A	
6.30.1	Fuel injection pump service tool kit	1 set	A	
6.31.1	Valve refacer	1	A	
6.31.2	Band Sander (Belt Polisher)	1	A	
6.31.3	Air valve lapper with suction cap	1	A	
6.31.4	Valve lapping compound, coarse and fine	20	B	
6.31.5	Valve Seat Grinder (Round Grinding Machine)	1	B	*1, *2
6.31.6	Valve seat cutter set	1 set	B	*1, *2
6.32.1	Disc Sander, 100mm dia.	4	C	
6.32.2	Electric Hand Grinder, 32mmdia	1	B	
6 33.1	Set of tools for lubricating and other mechanical work Oil measure, Torch lump, Drum pump, High pressure grease pump Grease gun with accessories, Garage lump, Cylinder carrier, etc.	1 set	B	
7. Reparation Equipment				
7.1.1	Tire Changer, Heavy Duty	1	A	
7.1.2	Hydraulic Tire Removing Tool	1	A	
7.1.3	Tire Bead Remover, length 1.6m	2	B	
7.1.4	Tire Lever Different 5 size	1	B	
7.1.5	Universal Wheel Hub Puller	1	C	
7.2.1	Engine Positioner	1	A	
7 3 1	Set of tools for tire vulcanization and repair Air compressor Tube vulcanizer set Thermopress Tire pressure gauge	1 set	A	
7.7.1	Disc Assembling Unit	1	C	
7.8.1	Disc Leveling Stand	1	C	
7.9.1	Wheel Balancer	1	A	
7.10.1	Dynamic Balancing Machine for Crankshaft	1	A	
7.11.1	Brake Shoe Adjusting Tool Set	1 set	A	
7.11.2	Brake Pipe Flaring Tool Set	1 set	A	
7.11.3	Portable Brake Compression Tester Set	1 set	A	
7.11.4	Brake Spring Plier (S, M & L)	1 set	A	
7.11.5	Brake Anchor Pin Remover	1	A	
7.11.6	Micro-Hone Set for Brake Cylinder	1	A	
7.11.7	Brake Drum Gauge, 350-600mm	1	A	
7.11.8	Wheel Dolly, 7.50-11.00 Tire	1	B	
7.11.9	Brake Shoe Grinder	1	B	
7.11.10	Brake Disc Lathe	1	B	
8. Painting Equipment				
8.1.1	Painting booth	1	B	

No.	Equipment	Quantity	Priority	Note
8.2.1	Airless Spray unit	1	B	
8.3.1	Air Compressor, 2.2kw, 7kg/cm2	1	B	
8.5.1	Set of tools for painting Air hose, Spray gun, Container, Air hose socket & plug, etc.	1 set	B	
Component II – Field Training Equipment				
9. Field Training Equipment				
9.1.1	Combine harvester 185 HP and more	12	A	*2
9.3.1	Agricultural tractors 130 HP and more	12	A	*2
9.4.1	Agricultural tractors 80HP and more, narrow type	12	A	*2
9.7.1	Balers round, 300 kg bales	12	A	*2
9.8.1	Reversible plows 130HP	12	A	*2
9.10.1	Disc harrow 2.5 - 3.0m	6	A	*2
9.11.1	No-till precision planter	6	A	*2
9.12.1	No-till drill	6	A	*2
9.15.1	Fan sprayer	6	A	*2
9.16.1	Transplanter	2	A	*2
9.17.1	Combinator	6	A	*2
9.19.1	Baler square, 30 kg bales	6	A	*2
9.20.1	Bedding equipment	2	A	*2
10. Equipment for Mobile Technical Service				
10.1.1	Service car	3	B	*1, *2
Component III – Class Training Equipment				
11. Equipment for training classes				
11.1	Tractor chassis instruction model	1	C	
11.2	4-stroke gasoline engine instruction model	1	B	
11.3	4-stroke diesel engine instruction model	1	B	
11.4	Diesel distributor injection pump model	1	B	
11.5	Plunger barrel injection pump plastic model	1	B	



Japan's Grant Aid Scheme

The Grant Aid Scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulation of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Japan's Grant Aid Procedures

(1)The Japan's Grant Aid Program is executed by the following procedures.

Application (request made by a recipient country)
Study (Basic Design Study conducted by JICA)
Appraisal & Approval (appraisal by the Government of Japan and approval by the Cabinet of Japan)
Determination of Implementation (Exchange of Notes between both Governments)
Implementation (implementation of the Project)

(2)Firstly, an application or a request for a Grant Aid project submitted by the recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Japan's Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA sends a Preliminary Study Team to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study Report prepared by JICA and the results are then submitted to the cabinet for approval.

Fourthly, the project approved by the cabinet becomes official with the Exchange of Notes signed by the Government of Japan and the recipient country.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

2. Basic Design Study

(1)Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project") is to provide a basic document necessary for appraisal of the project by the Japanese Government. The contents of the Study are as follows:

a) Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation,
b) Evaluation of the appropriateness of the Project for the Grant Aid Scheme from a technical, social and economical point of view,
c) Confirmation of items agreed on by the both parties concerning a basic concept of the Project,
d) Preparation of a basic design of the Project,
e) Estimation of cost of the Project,

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2)Selection of Consultants

For smooth implementation of the study, JICA uses (a) registered consultant firm(s). JICA selects (a) firm(s) based on proposals submitted by the interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the study is (are) recommended by JICA to a recipient country to also work in the Project's implementation after Exchange of Notes, in order to maintain technical consistency between the Basic Design and detailed Design.

3. Japan's Grant Aid Scheme

(1) Exchange of Notes (E/N)

Japan's Grant Aid is extend in accordance with the Notes exchanged by the two Government concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid etc., are confirmed.

(2)"The period of the Grant Aid" means one Japanese fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding a contract with (a) consulting firm(s) and (a) contractor(s) and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at

most by mutual agreement between the two Governments.

(3) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant may be used for the purchase of products or services of a third country.

However the prime contractors, namely, consulting, contractor and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

(4) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(5)Undertakings Required to the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

a) To secure land necessary for the sites of the project, and to clear, level and reclaim the land prior to commencement for the construction,

b) To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,

c) To secure buildings prior to the installation work in case the installation of the equipment,

d) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,

e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,

f) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(6)Proper Use

The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for the operation and maintenance as well as to bear all expenses other than those covered by the Grant Aid.

(7) Re-export

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

(8) Banking Arrangement (B/A)

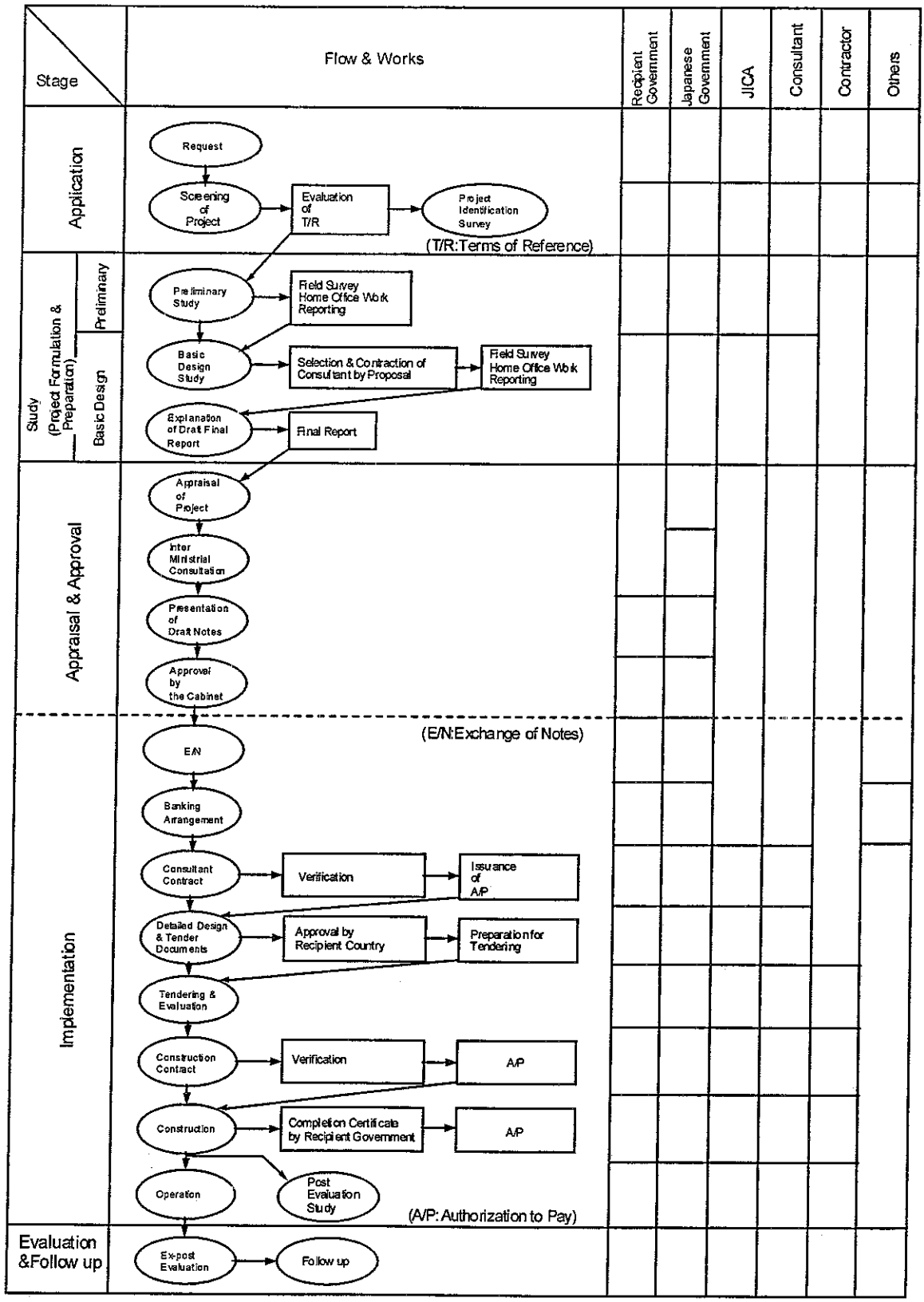
a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9)Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

Flow Chart of Japan's Grant Aid Procedures



Major Undertakings to be taken by the Each Government

No.	Items	To be covered by the Grant Aid	To be covered by the Recipient side
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	(1) Advising commission of A/P		•
	(2) Payment commission		•
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	(1) Marine(Air) transportation of the products from Japan to the recipient country	•	
	(2) Tax exemption and custom clearance of the products at the port of disembarkation		•
	(3) Internal transportation from the port of disembarkation to the project site	•	
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		•
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		•
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the transportation and installation of the equipment		•

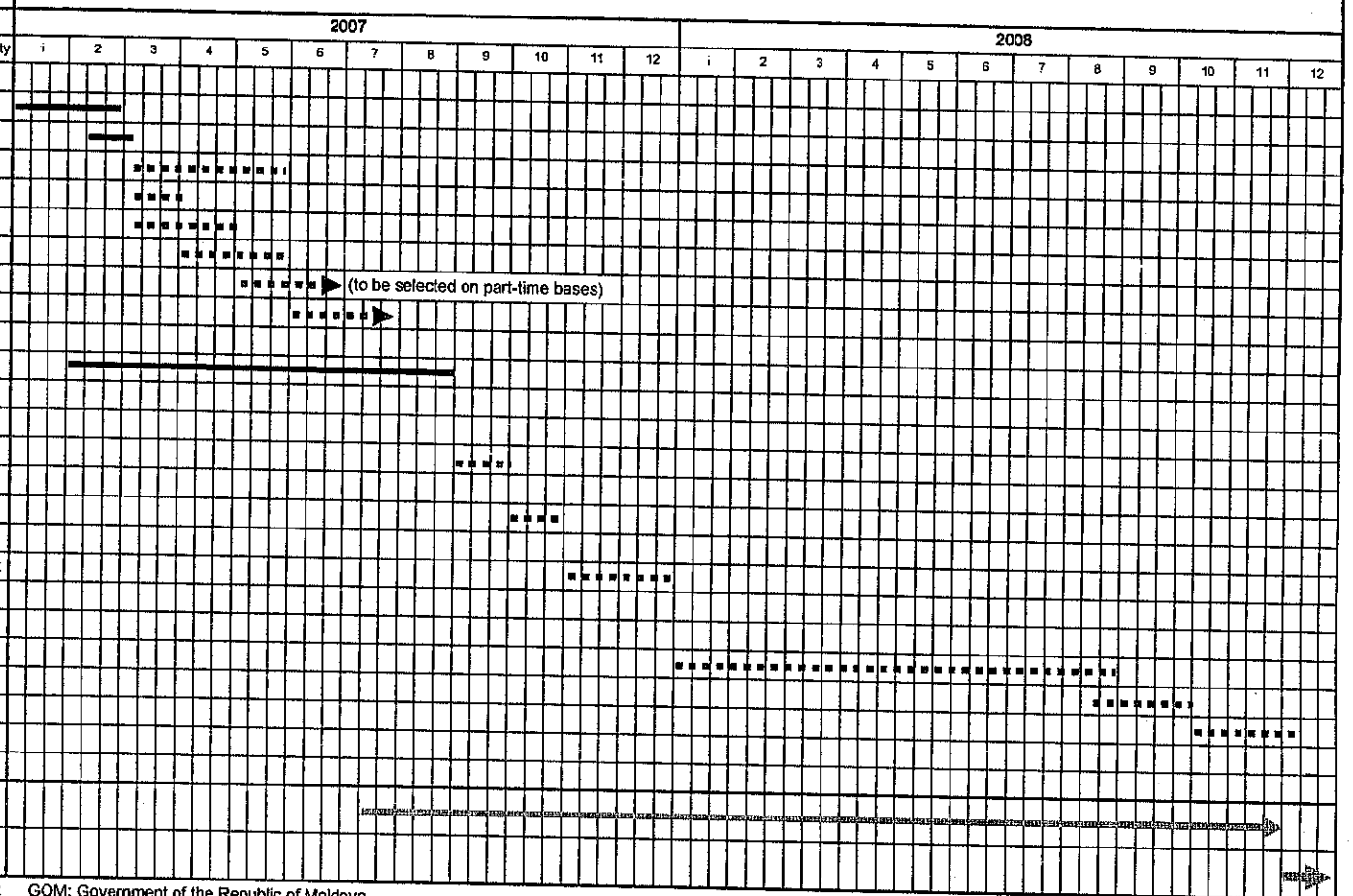
Project Implementation Schedule

Annex-VI

Date : 7 March 2007
Revised:

Project Title : The Project for Supply of Agricultural Training Equipment for the National Training Center for Agricultural Mechanization

Activity	Implementing Party
WORKS ON MOLDOVAN SIDE	
Construction	Client
Modification (Lecture Hall)	Client
Building Registration	Client
Furnitures (desk, chair, bed,	Client
Kitchen equipment	Client
Selection of Sub-contractors	Client
Assignment of PIU members	Client
Other works (if any)	Client
BASIC DESIGN STUDY	JICA
[Schedule for reference only]	
EXCHANGE OF NOTES	GOJ/GOM
DETAILED DESIGN	Consultant
TENDERING	Client/Consultant
PROJECT IMPLEMENTATION	
Manufacturing	Supplier
Transportation/Delivery	Supplier
Installation	Supplier
Acceptance	Client/Consultant
Provisional Training (seminars, etc.)	Client
Full-fledged Training	Client



Legend:
GOM: Government of the Republic of Moldova
GOJ: Government of Japan
Client: PIU of 2KR, Ministry of Agriculture and Food Industry
JICA: Japan International Cooperation Agency
Consultant: Japanese consulting company

Annex-VII

MINISTERUL
AGRICULTURII
ŞI INDUSTRIEI ALIMENTARE
AL REPUBLICII MOLDOVA

MD-2004, m.Chişinău, bld. Ştefan ce! Mare, 162
Tel.: 23-34-27, fax: 23-77-31

МИНИСТЕРСТВО
СЕЛЬСКОГО ХОЗЯЙСТВА
И ПИЩЕВОЙ ПРОМЫШЛЕННОСТИ
РЕСПУБЛИКИ МОЛДОВА

МО-2004, Кишинэу, бул. Штефан чел Маре, 162
Тел.: 23-34-27, факс: 23-77-31

15.04.06 nr. 04-390

La nr, _____ din _____

To: Embassy of Japan
in the Republic of Moldova

CC: Japanese International Cooperation Agency

The Ministry of Agriculture and Food Industry of the Republic of Moldova presents its complements to the Embassy of Japan in the-Republic of Moldova and wishes to inform that the development of the National Training Centre in the field of Mechanization is in progress, according to the schedule agreed with the Japanese side.

The process of development of the National Training Centre is conducted by the Project. Implementation Unit 2KR that has all necessary capacities including finance to complete the process and the Ministry has no doubts that it will progress as scheduled. At the same time, we would like to assure the Government of Japan that the Ministry of Agriculture and Food Industry would take all necessary measures including finance to secure the proper operation of the Centre in the future.

Using this opportunity, we would like to express to the Embassy of Japan the assurance of our highest consideration.

A. Gorodenco

Anatolie Gorodenco
Minister

MINUTES OF DISCUSSIONS ON THE BASIC DESIGN STUDY ON THE PROJECT FOR SUPPLY OF AGRICULTURAL TRAINING EQUIPMENT FOR THE NATIONAL TRAINING CENTER FOR AGRICULTURAL MECHANIZATION (EXPLANATION ON DRAFT REPORT)

In March 2007, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Supply of Agricultural Training Equipment for the National Training Center for Agricultural Mechanization (hereinafter referred to as "the Project") to the Republic of Moldova (hereinafter referred to as "Moldova"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult the Moldova on the components of the draft report, JICA sent to Moldova the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Tetsuji IIDA, Senior Project Administration Officer, Project Monitoring and Coordination Team, Administration and Coordination Group, Grant Aid Management Department, JICA, from 4th to 9th August, 2007.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Chisinau, 9th August, 2007

飯田鉄二

Mr. Tetsuji IIDA
Leader
Draft Report Explanation Team
Japan International Cooperation Agency
(Japan)

Mr. Ştefan Calancea
Deputy Minister
Ministry of Agriculture and Food Industry
(Republic of Moldova)

Mr. Vasile BUMACOV
Technical Director of PIU
Ministry of Agriculture and Food Industry
(Republic of Moldova)

Ms. Tatiana UDREA
Deputy Head
Division for Technical Assistance Coordination
Ministry of Economy and Trade
(Republic of Moldova)

ATTACHMENT

1. Components of the Draft Report

The Government of Moldova agreed and accepted in principle the contents of the draft report explained by the Team.

2. Japan's Grant Aid Scheme

Moldova side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Moldova as explained by the Team and described in Annex-V of the Minutes of Discussions signed by both parties on 7th March, 2007.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Ministry of Agriculture and Food Industry (hereinafter referred to as "MAFI") representing the Government of Moldova by the end of September, 2007.

4. Other Relevant Issues

4-1. Undertakings by the Government of Moldova

Both parties confirmed that, for the smooth implementation of the Project, the Government of Moldova should particularly implement the following matters as scheduled and secure the necessary budget described in Annex – I and Annex-II:

To terminate related engineering work which is necessary for installing equipment for the Project;

To connect electricity, water supply and sewerage system to the site;

To take necessary measures to secure safe and smooth transportation of equipment for the Project;

To exempt from custom duties, internal taxes and other fiscal levies imposed upon any equipment or materials concerned of the Project.

4-2. Land Usage Permission and Building Registration

Both parties confirmed that the land usage permission for the Project has been approved by the Government of Moldova described in Annex – III. And both parties confirmed that the

building registration should be completed by Government of Moldova by the end of September, 2007. The Government of Moldova will send it to JICA through the Embassy of Japan in Kiev, Ukraine.

4-3. Operation and Maintenance (O/M)

Both parties confirmed that the Government of Moldova is fully responsible for the proper operation and maintenance of the new facilities and following matters written below:

MAFI is responsible for the implementation of the Project and 2KR-Project Implementation Unit is in charge of implementation of the Project;

MAFI will allocate necessary budget for the Project annually in order to maintain the training center;

2KR-Project Implementation Unit is responsible for regular equipment check by administrator officer and keeps the checking data including problems.

4-4. Project Cost Estimation

Both parties agreed that the Project Cost Estimation, as attached in Annex-II, should never be duplicated or released to any outside parties before signing of all the Contracts for the Project.

4-5. Security Issues

The Government of Moldova agreed to take necessary measure to ensure the security of personnel concerned of the Project, if the Project is to be implemented.

Annex - I Tentative Implementation Schedule

Annex -II Project Cost Estimation

Annex - III Document on the land usage permission

Annex-I

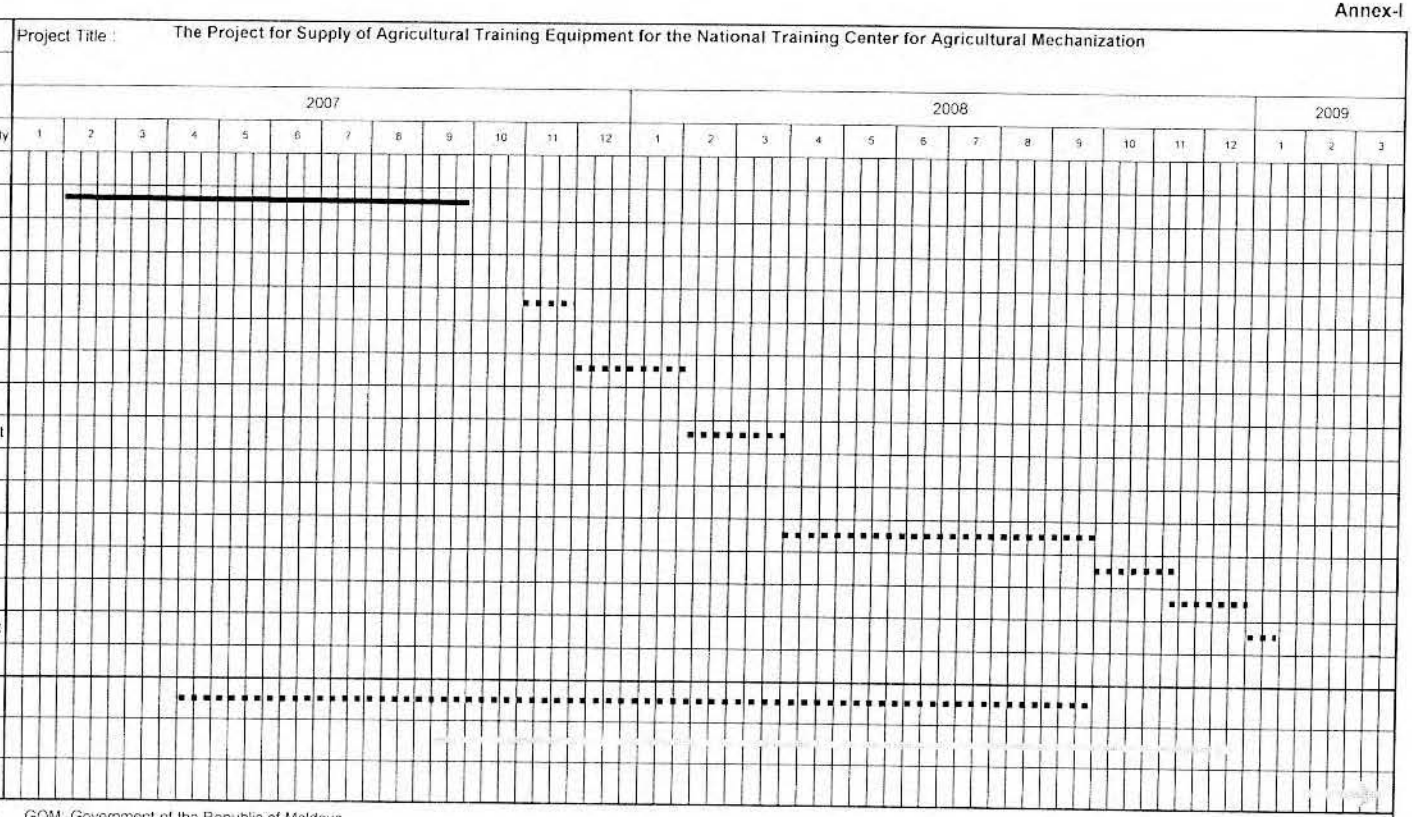
Tentative Implementation Schedule

Date : 9 August 2007

Revised

Project Title : The Project for Supply of Agricultural Training Equipment for the National Training Center for Agricultural Mechanization

Activity	Implementing Party
BASIC DESIGN STUDY	JICA
[Schedule for reference only]	
EXCHANGE OF NOTES	GOJ/GOM
DETAILED DESIGN	Consultant
TENDERING	Client/Consultant
PROJECT IMPLEMENTATION	
Manufacturing	Supplier
Transportation/Delivery	Supplier
Installation	Supplier
Acceptance	Client/Consultant
WORKS ON MOLDOVAN SIDE	Client
Provisional Training (seminars, etc	Client
Full-fledged Training	Client



Legend GOM: Government of the Republic of Moldova

GOJ: Government of Japan

Client: PIU of 2KR, Ministry of Agriculture and Food Industry

JICA: Japan International Cooperation Agency

Consultant: Japanese consulting company

Supplier: Japanese trading company

MINISTERUL
AGRICULTURII
ŞI INDUSTRIEI ALIMENTARE
AL REPUBLICII MOLDOVA

МИНИСТЕРСТВО
СЕЛЬСКОГО ХОЗЯЙСТВА
И ПИЩЕВОЙ ПРОМЫШЛЕННОСТИ
РЕСПУБЛИКИ МОЛДОВА

ORDINUL
ПРИКАЗ

mun. Chişinău

08 august 2005 № 160

Cu privire la transmiterea în folosinţă a terenurilor aferente

Având în vedere rezultatele pozitive obţinute la valorificarea ajutorului tehnic acordat Republicii Moldova de Guvernul Japoniei din contul Unităţii de Implementare şi Administrare a Proiectului Creşterii Producţiei Alimentare (2 KR)şi în scopul extinderii şi atingerii unui impact cât mai benefic asupra dezvoltării agriculturii în ansamblu şi lansării activităţii Centrului Republican de Perfecţionare în domeniul Mecanizării Agriculturii (Moldo-Japonez), şi dat fiind faptul, că Întreprinderea Agricolă de Stat „Serele din Chişinău", în temeiul ordinului Ministerului nr. 78 din 15.04.2005, se află în procedură de lichidare,

ORDON:

1. Se transmite terenul cu suprafaţa de 1,07 ha, aferent edificiului Centrului Republican de Perfecţionare în Domeniul Mecanizării Agriculturii (mun. Chişinău, str. Calea Basarabiei, 18), de la Întreprinderea Agricolă de Stat „Vivaflora" în folosinţa Unităţii de Implementare şi Administrare a Proiectului Creşterii Producţiei Alimentare (2 KR), fără drept de înstrăinare.
2. Direcţia Consolidarea Terenurilor Agricole (I. Botnarenco), în comun cu Unitatea de Implementare şi Administrare a Proiectului Creşterii Producţiei Alimentare (2 KR) vor perfecta şi înainta Agenţiei Relaţii Funciare şi Cadastru actele necesare pentru înregistrarea acestui teren în folosinţa unităţii nominalizate.
3. Controlul asupra executării prezentului ordin îl exercită dl Anatolie SPIVACENCO, viceministru.

Ministru — Anatolie GORODENCO

Ministerul Agriculturii şi Industriei Alimentare al Republicii Moldova
Direcţia Control General şi Serviciul Uman
1006601000056

APPENDIX-6

UNIAGROPROTECT
UNIUNEA REPUBLICANĂ A ASOCIAȚIILOR PRODUCĂTORILOR AGRICOLI

UNIAGROPROTECT
THE REPUBLICAN UNION OF AGRICULTURAL PRODUCERS ASSOCIATIONS

Survey on the Training Needs at the National Training Center for Agricultural Mechanization

Prepared for: UNICO International Corporation

(EXTRACTED)

Chisinau
March, 2007

INTRODUCTION

This report was developed according to the provisions of the contract signed by Republican Union of Agricultural Producers "UniAgroProtect" and UNICO International Corporation, commissioned by the Japan International Cooperation Agency (JICA) to provide certain services with respect to the Basic Design Study on the Project for Supply of Equipment for the National Training Center for Agricultural Mechanization in the Republic of Moldova, and the technical specification appended to the contract. The study is focused on determining the training needs of Moldovan agricultural producers, as well as other relevant target groups, in the field of agricultural mechanization

The Republic of Moldova (see the map in Annex 1 on page 50) is part of the Former Soviet Union, being highly specialized in the field of agriculture. During the Soviet time, in Moldova there was a number of over 55 000 units of agricultural tractors, 4 400 combine harvesters, 18 000 ploughs and 23 000 cultivators, etc. All this equipment has been serviced in over 40 state enterprises placed in every region and specialized in reparation of agricultural machinery and equipment. Additionally, in each region (raion) there were corporate associations (service-cooperatives) specialized in service and repair of agricultural machinery and equipment. A separate enterprise, called "Moldselihoztehnica," specialized in supply of agricultural equipment and machinery, as well as repairs and service of machinery and equipment. This state enterprise was specialized mainly in supply of different agricultural machinery and equipment, but at the same time it had branches in every raion and also provided service and repairs to the equipment supplied.

Presently, the number of agricultural equipment dropped dramatically, i.e. from 55 000 to 40 400 tractors, from 4 400 to 3900 combines, from 18 000 to 13 000 ploughs etc. over 80% of the equipment being and outdated (over 10 years old) and requiring more service and repairs. At the same time, almost all enterprises specialized in service and repairs of agricultural equipment went bankrupt and have been closed.

During the Soviet time, there were approximately 1000 collective and state owned agricultural enterprises in the country. After the completion of privatization process, over 1 million people have been entitled with 1.5 million hectares of land. By the year 2004, out of the total number of people entitled with land, more than 400 000 people registered private farms and are practicing farming. Most of these people are unskilled and practice subsistence farming, being not able to implement modern technologies and get enough profits.

The Increase of Food Production Project 2KR in Moldova, funded by the Japanese Government, during its 5 years of activity became one of the biggest importers of agricultural machinery in the country. The equipment sold under the 2KR Project in Moldova is sold in installments for the period of three to four years with no interest applied to the price. Due to the specific mechanism that should be applied in case of leasing operation (hire-purchase in case of Moldova), the equipment should be serviced during the whole period of the contract, ensured with CASCO insurance (against theft, fire, accidents) etc. This equipment is property of the 2KR Project until its price is entirely paid by the contracting agricultural enterprise.

There are only three teaching institutions in Moldova training specialists in the field of mechanization (mechanical engineers): State Agrarian University of Moldova preparing mechanical engineers and two colleges in Svetlii and Soroca preparing operators of machinery.
All these teaching institutions are endowed with very old agricultural machinery and stands or have improper teaching facilities and are not able to prepare good specialists.

Taking into consideration the above mentioned facts, there are at least three main requirements that conditioned the development of the National Training Centre for Agricultural Mechanization in the Republic of Moldova:

a) Lack of modern facilities for reparation and service of agricultural machinery, especially western type of machinery.

b) Necessity to provide private farmers benefiting from the 2KR project in Moldova with high quality service for the machinery during the hire-purchase (lease) contract;
c) Lack of training facilities and incapacity of training institutions in the country to provide good quality training to private farmers and students in the field of modern agricultural machinery and equipment;

During the implementation of the 2KR Project in Moldova it became obvious that without proper facilities for repairs, service and training of specialists, the continuity of the 2KR Project will be under the threat, and is only a question of time when the project will become not able to service such a big number of equipment. After 4 years of operation a big part of equipment (tractors and combine harvesters) procured under the 2KR Project requires more serious repairs, which could not be performed in open air and needs special conditions and equipment. Initial reputation of successful launch of 2KR in few years could be seriously damaged by lack of high quality repairing, service and knowledge of farmers. In case of such problems farmers could consider Japanese and Western machinery of a bad reputation. This can become an obstacle in the way of implementation of new technologies. Thus, establishment of facilities for repairs and service became the number one target for the 2KR Project in order to ensure a proper continuation of the project in the future.

Following the first evaluation mission from the Government of Japan regarding the establishment of the National Training Centre "2KR Leasing", the Ministry of Agriculture and Food Industry of Moldova has decided to delegate all responsibilities for establishment and administration of the Centre to the Project Implementation Unit of the Increase of Food Production Project 2KR.

The present survey was undertaken by the Republican Union of Agricultural Producers "UniAgroProtect" during the period February-March 2007 in 35 administrative units of the Republic of Moldova (34 raions and the capital district – Chişinău municipality). At the end, the study contains a set of conclusions and recommendations, focused on suggesting practical recommendations regarding the development and implementation of training courses required by Moldovan agricultural producers, mechanized service providers and other involved parties.

A. RESEARCH METHODOLOGY

Research goal: To identify the needs among the stakeholders towards the training programs to be conducted at the National Training Center for Agricultural Mechanization and to justify the Project components based on the actual needs.

Research method: nationally representative opinion poll.

Research technique: face-to-face interview performed at the respondent home/job place.

Target group:
- agricultural producers (small family-type farms, limited liability companies, production cooperatives, JSCs and kolkhozes)
- farm mechanisation service providers
- providers of agricultural machines and equipment reparation services
- local manufacturers of machinery
- dealers of agricultural machinery and equipment
- farmers union
- education/research institutions

Research tool: written structured questionnaire. The questionnaire was elaborated by the Beneficiary in collaboration with survey Agency. Working language was Romanian and Russian. The average length of questionnaires varied from 20 minutes to one hour.

Five types of questionnaires were elaborated according to specific target group:

- a questionnaire for agricultural producers;
- a questionnaire for farm mechanisation service providers;
- a questionnaire for providers of agricultural machines and equipment reparation services, local manufacturers of machinery and dealers of agricultural machinery and equipment;
- a questionnaire for administrative staff and teachers of education/research institutions;
- a questionnaire for students of education institutions.

Sample size:

Target group	Number
agricultural producers	427
farm mechanisation service providers	63
local manufacturers of machinery	1
providers of reparation services, dealers of agricultural machinery and equipment	9
farmers union	1
administrative staff and teachers of education/research institutions	10
students of education institutions	30
TOTAL	**541**

Sample structure:
All 34 raions of the country were included in the sample, plus Chisinau municipality (capital district). Certain target groups under sample survey (particularly, agricultural producers and farm mechanisation service providers) were distributed proportionally per raion. The other target groups are concentrated in a limited number of localities and no distribution was necessary – for example, dealers of agricultural machinery and equipment are located mainly in the capital of the country Chisinau.

11 interviewers were involved in the field work: 10 interviewers for 34 raions and one for municipality Chisinau. All 10 interviewers outside the capital organised the field-work using car services that allowed collecting data in a short period of time. The entire period spent for the field work was 9 days – March 4-12, 2007.

The interviewers took photographs of the majority interviewed respondents who accepted to be photographed. All the photographs were presented to UNICO International Corporation in electronic format (JPEG files) with the appropriate instructions attached.

Data validation methodology
Before starting the research, all interviewers were trained on the questionnaire filling-in and on fieldwork activities.

Field work supervisor checked all the questionnaires and compliance with the selection methodology according to the following criteria:
- control of all questionnaires filling in correctness (100%);
- control through the phone 50% of respondents that have telephone;

Data entry and data processing soft:
All data collected from the field were verified and then entered into the statistical program SPSS version 11.5 by personnel trained and specialized in data entry. Once the data were entered, the database was verified and cleaned to eliminate discrepancies.

Representativeness:
The research results are representative for entire studied population. Trends identified and assessed can be generalized for entire country and target population of the study.

B. PROFILE OF TARGET GROUPS

I. Agricultural Producers

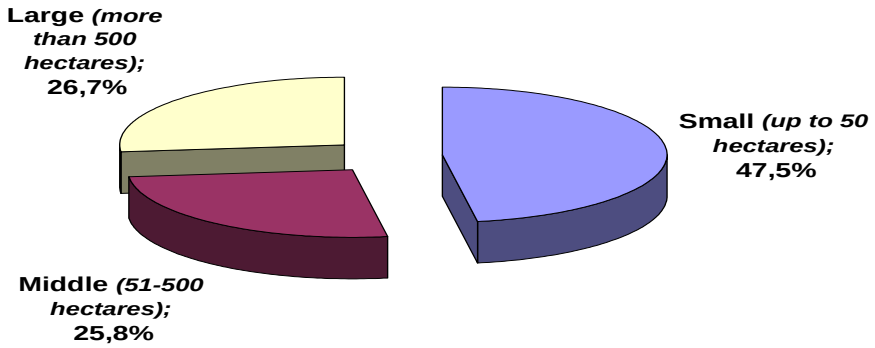
Almost all agricultural producers (96%) come from rural areas, while 4% - from urban areas. Agricultural producers have been interviewed from each of 33 raions of the Republic of Moldova. On average, 13 agricultural producers have been interviewed from every raion.

Distribution by regions of the country shows about the same share for northern (38.2%) and central part of the country (35.8%). 26% of interviewed agricultural producers are located in southern part of the country.

By type of business organisation, the highest share is represented by family-type small landed farmers (41.5%) and limited liability companies (38.4%). Almost every tenth interviewed agricultural producer acts as tenant farmer (peasant farm leasing in land). Besides these business forms, there have been registered others, but with less significant proportion: production cooperative (a kind of collective farm) – 6.3%, joint-stock companies (1.6%), collective farmers (Kolkhoz) – 1.4%, business cooperatives (0.7%) and associations of peasant farms (0.7%).

Almost one half of interviewed agricultural producers (47.5%) are *small farmers*, in terms of farmland area; having up to 50 hectares in present (see Chart 1.1).

Chart 1.1. **Size of Interviewed Agricultural Producers by Area of Farmland**



Every fourth interviewed agricultural producer is a *medium-size farmer*, having 51-500 hectares of farmland. Other quarter of interviewed producers is *large size farmer*, who work on more than 501 hectares of farmland. The distribution of agricultural producers by farmland area remains stable comparing with 2004 year.

The future prediction of agricultural producers' size is quite difficult to assess, as almost every fifth interviewee was uncertain about his plans, in terms of farmlands area, by 2010.

The most often produced agricultural products in Moldova are *crops* (84.3% of interviewed farmers), *maize* (76.6%) and *sun flower* (76.3%). Almost half of farmers (44.7%) deal also with *fruits*, while every third farmer (31.1%) – with *vegetables* (see for more details table below).

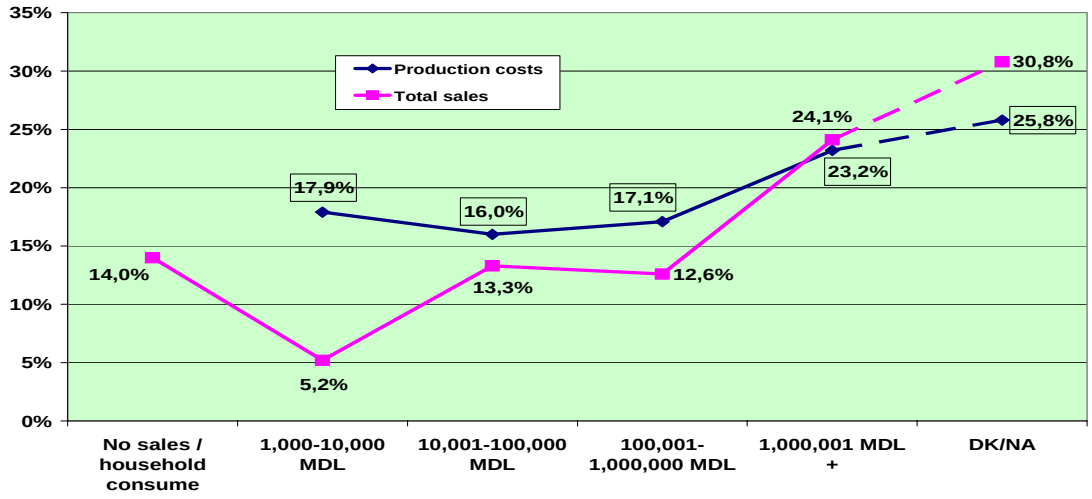
Comparing with production in 2004 the weight of products seems to be stable, while, with respect to future plans, the data show a decrease for almost all types of crops (except grapes) with 5%-12% . Detailed information on the main farm work for the crops by the month is presented in Annexe 2, Tables 1.1.-8.3., page 51.

Type of Crops	*2004*		*Present*		2010	
Cereals	343	80.3%	360	84.3%	308	72.1%
Maize	321	75.2%	327	76.6%	289	67.7%
Sun flower	311	72.8%	326	76.3%	275	64.4%
Beet	96	22.5%	104	24.4%	83	19.4%
Tobacco plant	31	7.3%	28	6.6%	23	5.4%
Vegetables	122	28.6%	133	31.1%	119	27.9%
Fruits	178	41.7%	191	44.7%	179	41.9%
Grapes	111	26%	108	25.3%	114	26.7%

In terms of production turnover, it was assessed that almost every fifth interviewed agricultural producer (19.6%) is *small farmer* with total turnover of up to 10 tons; 30.2% of farmers could be assessed as *medium farmers* with total production turnover of 11-500 tons, while 32.1% - *large farmers* with a turnover of more than 501 tons. For 18.1% of interviewees it was difficult to assess their annual total output in tons.

Production costs, evidently, depend on the farm land worked by agricultural producers. The Chart 1.2. illustrates the grouping of agricultural producers by the production costs. Thus, 17.9% of interviewed farmers are *small farmers* with production costs up to 10,000 MDL; 33.1% are *medium size farmers* with production costs from 10,001 MDL to 1,000,000 MDL and 23.2% are *large farmers* with production costs more than 1,000,000 MDL. 25.8% of interviewed agricultural producers refused to provide data on production costs.

Chart 1.2. **Production Costs and Sales of Agricultural Producers**



The same grouping as for production costs could be applied for sales turnover. The chart above shows that 14% of agricultural producers don't have sales and use products for household consume. 5.2% are *small farmers* with total sales up to 10,000 MDL; 25.9% are *medium size farmers* with overall sales from 10,001 MDL to 1,000,000 MDL and 24.1% are *large farmers* with sales turnover more than 1,000,000 MDL

40% of all interviewed agricultural producers confirmed they have profits from the agricultural activity, while 27% don't have incomes on this activity and register only losses (detailed information on the level of profits/losses is presented in the table below).

22.7% of farmers had difficulties in assessing incomes from their activity or refused to provide information on the presence of profits/losses. At the same time, every tenth farmer mentioned having neither profits nor losses.

26.2% of interviewed agricultural producers benefited from, or currently are beneficiaries of 2KR project. Correlative analysis attests that more beneficiaries of 2KR project are from southern (30.6%

out of interviewed farmers located in the southern region) and northern (29.4%) regions of the country, comparing with central region (19.6%).

	Profits		Losses	
No profits/losses	*43*		*10.1%*	
Up to 1,000 MDL	3	0.7%	2	0.5%
1,001-5,000 MDL	21	4.9%	23	5.4%
5,001-10,000 MDL	13	3.0%	6	1.4%
10,001-50,000 MDL	35	8.2%	24	5.6%
50,001-100,000 MDL	16	3.7%	5	1.2%
100,001-500,000 MDL	39	9.1%	24	5.6%
500,001-1,000,000 MDL	13	3.0%	6	1.4%
1,000,001 MDL +	16	3.7%	3	0.7%
Have profits/losses, but DK (don't know) how much	16	3.7%	22	5.2%
DK*(don't know)*/NA* (No answer) *if losses or profits	*97*		*22.7%*	

45.7% of those producers, who benefited from 2KR project, procured machinery and equipment through the project in 2001-2003. The highest share (41.1%) of 2KR project beneficiaries was registered in 2004. 28.6% benefited from 2KR project in 2005, while 36.7% are recent beneficiaries (2006-2007 years). Here is important to note that 1/3 of 2KR project beneficiaries used the project services twice, while 12.6% - three times and 4.5% - four times.

Analysis of data by the size of agricultural producers shows that large (56.1%) and medium-size (30.9%) farmers are those benefiting mostly from 2KR project, comparing with small producers (6.9%).

Machinery purchased through 2KR project refers mainly to tractors (especially Tractor MTZ 82 from Belarus) and combines (especially Combine Niva SC5 from Russia and Combine Sampo from Finland). More detailed information on machinery and equipment bought through 2KR project is presented in the table below:

Type of Machinery	Nr.	%
Tractor MTZ 82 (Belarus)	85	75,9%
Tractor MTZ12.21 (Belarus)	4	3,6%
Tractor Kubota (Japan)	11	9,9%
Tractor Landini (Italy)	5	4,5%
Tractor Massey Ferguson (Denmark)	3	2,7%
Combine Niva SC5 (Russia)	10	9,0%
Combine E-517 (Germany)	2	1,8%
Combine Sampo (Finland)	15	13,4%
Combine E-525 (Germania)	1	0,9%
Combine Massey Ferguson (Denmark)	1	0,9%
Combine CASE (Germany)	1	0,9%
Seeding machine SPC 6 (Romania)	2	1,8%
Seeding machine Bălți (RM)	1	0,9%
Seeding machine SUPN (Ukraine)	2	1,8%
Cultivator CRN 4.2 (Moldova)	1	0,9%
Cultivator CPS 4 (Moldova)	1	0,9%
Spraying machine OPV-2000 (Russia)	7	6,3%
Spraying machine OB 1500 (Russia)	1	0,9%
Spraying machine SLV2000 (RM-Italy)	4	3,6%
Spraying machine SLV1500 (RM-Italy)	8	7,2%
Spraying machine BAYER (Germany)	3	2,7%
Irigation system trogh dripping	3	2,7%
Disks with harrow BDT 7	2	1,8%
Combinator CNS 2.6	1	0,9%
Presser for straws baling	1	0,9%

In all, 82.1% of beneficiaries purchased up to 5 units through 2KR project, while 14.3% - from 5 to 10 units and 3.6% - more than 10 units.
Almost 92% of 2KR beneficiaries confirmed their satisfaction with machines and equipment procured through the assistance of 2KR project. Only 4.5% of beneficiaries are not satisfied at all, while 1.8% - partly. The machinery and reasons for being unsatisfied are as follows (according to some producers):

- the maintenance for German combines is too expensive (reparation, need special oil etc.);
- combine SAMPO don't have tool for maize and sunflower harvesting;
- tractor Landini broken
- the beneficiary procured an used combine Massey Ferguson that was previously bought by other beneficiary. As a result, the combine procured often is out of order, the plough is bad.

41.2% of interviewed agricultural producers don't have workers. These producers are family-type small landed farmers. Every fourth producer (27.0%) is medium size farmer, having from 11 to 50 employees in 2007. 13.7% are small farmers with no more than 10 employees –in 2007. 18.1% in 2007 are large companies with more than 50 employees. Generally, it was assessed during the period of 2004-2007 an insignificant (5%) continuous increasing trend for medium size companies. As for the nearest future plan the findings attest 18.3% of farmers from the total sample (or 31% of those having employees) that don't know what would be the number of employees by 2010.

Negative fluctuation of personnel is a significant problem faced by agricultural producers, as 25.5% of companies encountered such troubles in 2005 and 33.9% in 2006, while the share of new employees is always less (26% of new employees for 100% going out in 2005, 13.6% in 2006 and 14.6% in 2007). Moreover, during 2.5 months of the 2007 year already 17.5% of interviewed farmers registered negative fluctuation of employees in their companies.

The most often mentioned reasons for employees' resignation are *voluntary resignation* and *retirement*.

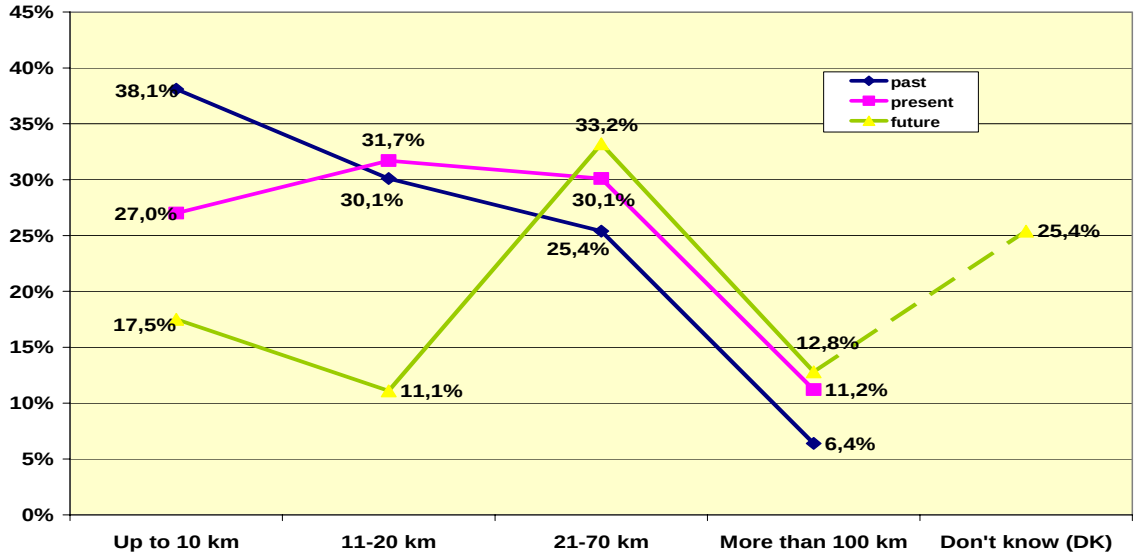
II. Mechanisation Service Providers

The majority of mechanisation service providers (87.3%) come from rural areas, while 12.7% - from urban areas. Mechanisation service providers have been interviewed from each of the 34 raions of the Republic of Moldova. On average, 2 mechanisation service providers have been interviewed from every raion.

Distribution by regions of the country shows about the same share: 39.6% of mechanisation service providers are from northern part of the country, 30.2% - from the central part and other 30.2% - from south of the country.

As for the service areas of mechanisation service providers, the data collected emphasize an extension-oriented trend (see Chart 2.1). Therefore, if in past 31.8% of mechanisation service providers provided their services in areas of 20 km and larger, than in present the share increased up to 41.3% (it should be noted that proportion of companies providing service on the area more than 100 km increased twice).

Chart 2.1. **Service areas of mechanisation service providers**



With respect to future plans, the trend of geographical scattering continues – 46.0% of mechanisation service providers plan to provide their services for an area of more than 100 km. However, it should be emphasized also a quite high rate of uncertainty: almost every fourth mechanisation service provider wasn't able to draw his future plans.

Mechanisation service providers offer their services for all types of businesses of agricultural producers:

- family-type small landed farmers
- tenant farmers (peasant farm leasing in land)
- production cooperatives (a kind of collective farm)
- limited liability companies
- collective farmers (Kolkhoz)
- business cooperatives
- joint-stock companies

The largest type of businesses, which use services provided by mechanisation service providers are family-type small farmers: 87.3% in the past and 93.7% in present. This is evident, due to the fact that this type of agricultural producers does not own agricultural machinery. The other large categories of mechanisation service providers' clients are tenant farmers (54.0% in the past and 65.1% in present) and limited liability companies (46.0% in the past and 52.4% in present). More details can be found in Annexes 3, Table 9, page 59.

More than a half of mechanisation service providers are medium size companies, having from 11 to 50 employees – 52.4% in 2006 and 58.8% in 2007. About one third of companies are small companies with no more than 10 employees – 33.4% in 2006 and 31.8% in 2007. About 11% in 2006 were large companies with more than 50 employees, while in 2007 the share decreased a little to 9.4%. Generally, it was assessed during the period of 2004-2007 a continuous decreasing trend for small companies and increasing one for medium size companies. As for the nearest future plan the findings attest 33.2% of companies that don't know what would be the number of employees by 2010.

60.1% of farm mechanisation service providers had 1-10 service staff in 2006 and 57% in 2007, while 30.3% of companies had 11-30 service staff employees in 2006 and 36.6% in 2007. Generally, the turnover of service staff seems to be quite stable in the period of 2004-2007. With respect to service staff, 1/3 of companies again are not sure about the nearest future plans.

The highest proportion of service staff by average age is represented by medium age specialist (36-45 years old). Their average share in companies' service staff turnover is about 53% for the period of 2004-2007. The percentage of young specialists (20-35 years old) varies from 9.6% in 2004 to 14.3%

in 2007. The same situation is for elder specialists (46-55 years old): their proportion in 2004 is 9.6% and reaches 22.3% in 2007. The increase in number of young specialists and old specialists, on the one, hand, and the relative stability in number of medium age specialists, on the other hand, is due to the fact that for 2004 and 2005 23.8% of companies were not able to provide such information, while for 2006 and 2007 their share decrease to 9.5% and, respectively, to 6.4%. However, it could be assessed faster increase of old age service staff, comparing with young service staff. Correlation by type of residence, illustrate the old age staff is registered only in rural areas.

Farm Mechanisation Service Providers are directed mostly to employees with professional secondary education (on average 62% of companies) and practical skills (on average 40%). No employees with general secondary education are accepted, as well as no request was registered for potential employees with master and PhD degree. About 18% of Farm Mechanisation Service Providers could request people with higher education and 28% - employees with professional college. The trends for the period of 2004-2010 look to be stable.

Farm Mechanisation Service Providers offer internal trainings for their employees. As a result of internal trainings, the employees benefit from higher salaries (as attested by 57.1% of companies) and higher position (19% of companies). However, 1/3 of interviewed Farm Mechanisation Service Providers don't offer any incentives for the trained employees.

Negative fluctuation of service staff seems to be an insignificant problem for Farm Mechanisation Service Providers, as no more than 12.7% of companies encountered such troubles. The highest frequency of negative employees' turnover was registered in 2005 (11.2%) and 2006 (12.7%); but, on the other side, 23.8% of companies in 2006 had positive fluctuation of services staff and 20.6% in 2007.

The most often mentioned reasons for service staff resignation are *retirement* and *voluntary resignation*. Besides these, there have been registered some cases of *layoff, dismissal* and *internal personal changes*.

III. Manufacturers/Dealers of Agricultural Machinery and Reparation Service Providers

The majority of manufacturers/dealers/reparation service providers (8 companies) come from urban areas, while 2 - from rural areas.

Distribution by regions of the country shows that almost all manufacturers/dealers/reparation service providers (9 companies) are located in central part of the country and one in southern part.

Manufacturers/dealers/reparation service providers offer their service for the whole country. At the same time, one dealer extended its area to Romania in present, while in the future two dealers of agricultural machinery plan to provide their services in Romania also. As for the interviewed manufacturer of agricultural machinery, it extended the services to Russia and Azerbaijan in present and plan to deliver manufactured machinery to Nigeria and Marocco in the future.

Manufacturers/dealers/reparation service providers offer their services for all types of businesses of agricultural producers:

- family-type small landed farmers
- tenant farmers (peasant farm leasing in land)
- production cooperatives (a kind of collective farm)
- limited liability companies
- collective farmers (Kolkhoz)
- business cooperatives
- joint-stock companies

When asked to note the number of client by each type of businesses, it was difficult to them to say the number of their clients, even the general number. However, the records from some companies allow us

to assess that the number of client tends to increase over time. The lowest number of clients recorded is 300 clients in the past and 400 clients in present, while the highest number is of 500 clients in the past and 15,000 clients in present.

One half of the interviewed companies (5) are large companies, having more than 51 employees, while 3 companies have 11-50 employees and the remaining 2 companies – up to 10 employees. The in-depth analysis emphasizes that the majority of service providers increased their staff from 2004 to 2007, in case of most companies the increase of staff varying from 10% to 25%. Only two dealers of agricultural machinery increased the number of their staff more than twice, while one reparation service provider reduced the staff number by 20%. In terms of future plans, the most companies intend to increase staff number: the majority of these companies plan to increase staff number with 10%-27% and the others with 40%-50%.

As for the service staff, the data recorded show that the share of service staff is more than 50% of the total company staff. Most interviewed companies mentioned the share of service staff more than 75% of the total staff, while for a part of companies there share varies from 55% to 60%. In case of the most companies the average age of services staff varies from 34 to 40 years old, while two companies have old age service staff varying from 50 to 55 years old. Only one company has young specialists with an average age of 28 years old.

As in case of general staff, the figures on the number of service staff show a constant more (100%-500% according to some companies) or less significant (13%-33% according to majority of companies) general increase during period of 2004-2007. However, 1/3 of companies mentioned cases of service staff resignation. Two reasons for service staff resignation have been noted: retirement and voluntary resignation. For the last reason a company representative specified *small salary* as reason for voluntary resignation.

As for the qualifications requested from new employees, the majority of companies require higher education and almost one half of them – professional college. From two to four companies limit their requests to secondary education and professional secondary education. At the same time, almost a half of companies require also practical skills from new employees. It is important to note that one company has no qualification requests for new employees that could be explained by the insufficiency of labour force.

The information collected show that most companies (8 out of 10 interviewed) have internal training for their employees. However, only in half of companies the employees have significant benefit from the internal training in the form of higher salary or higher position.

IV. Educational and Research Institutions

For this study three educational and one research institutions have been investigated:

- Agricultural State University in Chisinau – respondents (four teachers)
- Agricultural Technical College in Soroca – respondents (vice director, teacher and 10 students)
- Agricultural Technical College in village Svetlii, TAU Gagauzia – respondents (director, teacher and 10 students)
- State Station for Machinery Testing, Chisinau – respondents (two people from administrative staff)

Locations of teaching/research farms of the above mentioned institutions are as follows:

- Agricultural State University in Chisinau – Chisinau, region Petricani, 180 hectares;
- Agricultural Technical College in Soroca – raion Soroca, village Zastinca, 79 hectares;
- Agricultural Technical College in village Svetlii, TAU Gagauzia – TAU Gagauzia, village Svetlii, 1327 hectares.
- State Station for Machinery Testing, Chisinau – Chisinau, village Colonita, 29 hectares.

The subjects' areas taught in educational institutions refer to agricultural mechanization, electro-mechanics, transport engineering and technology, auto transport, management in agriculture, machinery management. As for research institution, it is involved in testing and assessment of agricultural machinery conformity.

The teaching staff of educational institutions varies from 22 to 33 teachers (for Agricultural State University all figures refer to the departments related with agricultural mechanization subjects). It should be noted that the number of teaching staff is quite stable, with small trends of increase in case of Agricultural State University that plan to employ 9 new teachers by 2010 year. At the Agricultural Technical College from Soroca two new teachers came in 2005 and one more in 2006.

Researchers are attested to be only at State Station for Machinery Testing with the number of 14 in 2004-2006 (plus one new researcher in 2007) and Agricultural State University with the number of 20 researchers in 2004-2006 (plus two new in 2007). Both institutions plan to have additional researchers by 2010: two new researchers at State Station for Machinery Testing and four at Agricultural State University.

Technicians have been mentioned by State Station for Machinery Testing (1 technician in 2004-2007 and other two new by 2010), Agricultural State University (20 people in 2004-2005 and 15 people in 2006-2007; for 2010 is planned to reach again the number of 20 technicians) and Agricultural Technical College from Svetlii (8 technicians in 2004-2007).

The number of students in educational institutions is presented in the table below:

	1. 2004	**2. 2005**	**3. 2006**	**4. 2007**	**5. 2010**
Agricultural State University	320	350	420	550	700
Agricultural Technical College from Soroca	254	254	279	279	DK
Agricultural Technical College from Svetlii	DK	DK	410	410	DK

The figures in the table above show a positive trend with respect to students flow in educational institutions. In this context, is important to note that, according to administrative staff rough estimation, around 40%-50% of graduated students in Agricultural State University and Agricultural Technical College from Soroca get employment under their specialty, while in Agricultural Technical College from Svetlii the share is only 10%-20%.

Being asked about reasons for personnel and students withdrawal, it was found out that the most significant reasons for teachers, researchers and technicians' withdrawal from educational and research institutions are *retirement and voluntary resignation*. Students are mainly withdrawal due to *failure to pass exams, financial problems and moving to other departments of educational institutions.*

As for qualifications requested by educational and research institutions from new employees, it was attested that for teachers and researchers it is necessary to graduate at least professional college, but preferably university or to have a master degree or PhD. For technicians, the requirements are lower, being accepted also people with professional secondary education. However, preference is granted to those graduating college and university. An important thing for technicians is practical skills also.

D. TRAINING NEEDS AND SUGGESTIONS

I. Agricultural Producers

70.5% of agricultural producers are very interested in receiving training in the field of agricultural mechanization. 59.9% of them mentioned their interest in the training course named *Preventive Maintenance (general ideas on basic farm management and repair/maintenance)* proposed by the NTCAM. Besides this, 14.2% of farmers requested other training courses related to mechanisation, most significant being:

- Progressive technology (5.9%)
- Maintenance of motors for progressive technology (3.3%)
- Management, reparation and maintenance of modern technique (2.9%)

Additionally, 49.6% of agricultural producers (or 67.2% of those who have their own agricultural machinery) need training services on reparation of motors for machines produced by foreign manufacturers (except CIS manufacturers).

Individual companies asked also some training on different subjects than mechanisation: accounting, management, marketing etc.

29.5% of interviewed farmers refused any training. The majority of producers who are not interested in trainings are family-type small landed farmers (69.8%), especially those who don't have their own agricultural machinery and equipment.

65.5% of farmers interested in trainings desire specific topics on machinery management, maintenance and reparation, especially modern one.

25.8% of agricultural producers interested in trainings referred to topics not related to mechanisation subjects: agronomy, accounting, marketing, perspective for procurement of new agricultural machinery and equipment, financing systems for procurement of agricultural machines etc.

81.6% of farmers who desire trainings need to train up to 5 employees on the course *preventive maintenance*, while for 16.7% of companies more than 5 employees need to be trained. Cumulative number of people needed to be trained reach to 1090 persons for training course on *preventive maintenance (general ideas on basic farm management and repair/maintenance).*

53.5% of agricultural producers who need trainings agreed on the period of training during 5 days. 20.6% would like to attend training for 7-10 days, while 14.9% - for 11-20 days. An insignificant percentage of agricultural producers asked shorter period of trainings – during 2-4 days (4.0%) or longer periods – more than 20 days (6.3%). The research team suggest to trainings organiser to provide trainings for a period no longer than 10 days, taking into account the above described results.

As for the time of training, the research findings attest that for majority interviewed agricultural producers (55.6%) the acceptable timing is *December to February* or winter season. For this timing could be included also other 33.9% of respondents who accept timing proposed by trainings organisers – *end of January to end of May*.

When have been asked about acceptable fee for trainings, almost 1/3 of farmers (30.1%) willing to be trained refused or were not able to provide a concrete amount, while 12.0% would like trainings free of charge. On the other side, 44% of respondents accept a fee nor higher than 500 MDL for a trained person. Every tenth farmer agrees on a fee from 501 to 1,000 MDL (mainly limited liability companies), while 3.6% could afford to pay even more than 1,000 MDL for a trained person.

74.9% of interviewed agricultural producers would like that National Training Centre for Agricultural Mechanization performs education farm-works on their farm land, but only 49.4% of those willing such service agree to pay for the farm-works performed during trainings on their land.

Interviewed agricultural producers mentioned also certain additional requests to the NTCAM. The requests of 21.6% companies were related to the information and trainings on innovative technology (inclusively the machinery that is offered on the Moldovan market) and progressive methods for machine reparation. 1.3% of farmers specified the need for specialized literature (magazines, brochures etc.) that would include information about modern equipment and practical advices for agricultural producers.

9.6% of respondents stated certain guidelines on how the Center should activate:

- to create service centres in each raion / in three regions of the country – north, centre and south
- to provide trainings in each raion
- to focus on rural inhabitants
- to offer more practical activities
- to provide trainings in professional schools, so that graduated students could have basic knowledge and skills on operation, maintenance and reparation of agricultural machinery
- to create a hot line

7.8% of interviewed farmers asked the NTCAM for assistance in access to 2KR project, getting modern agricultural machinery, credits up to 10% rate of interest for purchased machinery and leasing period for 4 years, assistance in procurement of cheaper machinery and machine spare part.

II. Mechanisation Service Providers

93.7% of Farm Mechanisation Service Providers are very interested in receiving training in the field of agricultural mechanization. 79.4% of them are interested in the training course named P*reventive Maintenance (general ideas on basic farm management and repair/maintenance)* proposed by the National Training Centre for Agricultural Mechanisation*)*. Besides this, some companies requested other training courses related to mechanisation:

- Modern technologies (6.3%)
- Courses for combiners, mechanics focused on modern equipment (6.3%)
- Maintenance and reparation of motors for advanced machinery (6.3%)
- Reparation and maintenance of new machinery (3.2%)
- Maintenance of machinery out of working season
- Complex use of agricultural machinery
- Modern technique management
- Training on combine Class

Individual companies asked also some training on different subjects than mechanisation: accounting, management, marketing etc.

Only 6.3% of companies refused any training.

54.7% of Farm Mechanisation Service Providers desire topics on machinery maintenance and reparation, especially modern one. Particularly, some companies asked trainings on reparation of motors, methods of fast diagnosis, new technologies in case of drought, operation with foreign combines and maintenance and operation of brand “Class”.

20.8% of Farm Mechanisation Service Providers referred to topics not related to mechanisation: agronomy, agricultural management, accounting, marketing, new seeds, finance of agricultural business in foreign countries, perspective for procurement of new agricultural machinery and equipment, chemicals, financing systems for procurement of agricultural machines etc.

Other 24.5% of companies were not able to provide specific topic of interest.

84.9% of Farm Mechanisation Service Providers need to train up to 5 employees on the course *preventive maintenance*, while for 13.6% of companies more than 5 employees need to be trained. Cumulative number of people needed to be trained reach to 218 persons for training course on *preventive maintenance (general ideas on basic farm management and repair/maintenance)*.

According to statements of interviewed Farm Mechanisation Service Providers, 9.5% trained up to 5 people on preventive maintenance in the past, while in present 23.8% train up to 5 employees on the topic and other 3.2% of companies – more than 5 employees.

In 68.2% of interviewed companies it was recorded that trained staff would benefit from higher salaries, while in 12.7% of companies – from higher position. However, almost each fifth Farm Mechanisation Service Provider wouldn't offer any benefits/incentives for staff after trainings.

50.2% of Farm Mechanisation Service Providers agreed on the period of training during 5 days. 15.5% would like to attend training for 7-10 days, while other 15.5% - for 15 days. Almost each tenth company desire shorter trainings – during 2-4 days and 6.8% longer – 20-30 days.

As for the time of training, the research findings attest that for majority interviewed Farm Mechanisation Service Providers (61%) the acceptable timing is *November to March* (that is opposed to the timing proposed by training organiser – from end of January to end of May, and from end of September to medium of December). The timing proposed by training organiser is acceptable for 32.2% of interviewed companies, while an insignificant percentage of companies (6.7%) selected other timings, mainly late spring to medium of summer.

When have been asked about acceptable fee for trainings, almost 1/3 of Farm Mechanisation Service Providers refused or were not able to provide a concrete amount, while 13.6% would like trainings free of charge. Almost each fourth company accepts a fee from 60 to 300 MDL for each trained person. Other quarter of companies indicated a range of fees from 500 to 3,200 MDL, but majority of them accept a maximal fee up to 1,000 MDL.

The Farm Mechanisation Service Providers mentioned also certain additional requests to the NTCAM. The requests of 25.4% companies were related to the information and trainings on innovative technology (for example, progressive measure for machinery reparation; to train mechanisation staff, mechanics, and turners).

14.4% of companies stated certain guidelines on how the Centre should activate:

- to create service centres in each raion
- to provide trainings in each raion
- to focus on rural inhabitants
- to provide training during winter time
- to offer more practical activities
- to prepare everything on the basis of contracts

Almost 1/5 of interviewed Mechanisation Service Providers asked the NTCAM for assistance in access to 2KR project, getting modern agricultural machinery, credits up to 10% rate of interest for purchased machinery.

III. Manufacturers/Dealers of Agricultural Machinery and Reparation Service Providers

Majority of companies (6 out of 10 interviewed) are interested in participating in trainings to be provided by the NTCAM. Companies that mentioned no interest are as follows: the manufacturer, a reparation service provider and two dealers of agricultural machinery.

The training course desirable for companies interested in trainings is *preventive maintenance (general ideas on basic farm management and repair/maintenance)*. A reparation service provider asked also *theoretical and practical trainings at the factory* producing machinery it repairs.

Half of companies referred also to major topics they would like to be trained on: *reparation of modern tractors, machines, combines; selling and maintenance of agricultural machinery,* as well as *general management.*

The total number of people that need to be trained for the companies interested in trainings is 31 people. Two companies need 10 persons to be trained (each of the two companies), while the other companies mentioned 2-5 people.

The majority of companies interested in trainings (4 out of 6) asked a longer period for training than one proposed in questionnaire (5 days):

- 14 days (one company)
- 30 days (two companies)
- 60 days (one company)

The other two companies mentioned 2 and 5 days.

The most desirable time of training is winter season, mainly January-February months.

Almost all companies interested in trainings state that their staff would receive *higher salary* after training, while 1/3 of companies could appoint a higher position.

When asked to indicate the fee acceptable for the companies to pay for trainings for each trained person, almost all companies didn't like or it was difficult to them to specify the amount of fee. Only one company mentioned it would like courses to be free of charge.

The particular requests of companies to the National Training Centre for Agricultural Mechanization are as follows in descending order of frequencies:

- To train technical staff – a company representative emphasize the need to train young specialists, because they are more receptive to new technologies;
- To import and provide more modern equipment for maintenance and reparation;
- To open as soon as possible;
- To organize trainings with foreign trainers;
- To include the company in 2KR project;
- To collaborate as partners.

Individual companies mentioned certain requests that don't fit to NTCAM status and objectives: trainings to accountants and agronomists; trainings on protection machinery of plants and assistance in opening local branches of the company.

IV. Educational and Research Institutions

The questionnaire used for educational and research institutions operated with a set of training modules, named and marked as follows:

Module 2 – Machinery Operation

Module 3-1 – Deeper Knowledge on Modern Techniques for Repair and Maintenance

Module 3-2 – Specific and Modern Knowledge on Repair and Maintenance of Agricultural Machinery

Module 3-3 – New Approaches and Technologies on Maintenance and Repairs of Agricultural Machinery

Desired training for operators, mechanics, technicians and researchers is mostly the course focused on Module 3-2. Besides this, some administrative staff of educational institutions solicited trainings on ***labour security, modern machinery and practice at modern companies in agriculture***. Major subject to be studied is ***advanced technology, machinery and equipment***.

Teachers interviewed are interested in trainings on Module 3-3. One teacher solicited similar training courses abroad.

Students, in the opinion of administrative staff of educational institutions, are interested almost equally in trainings on *machinery operation* (Module 2) and *deeper knowledge on modern techniques for repair and maintenance* (Module 3-1). The major topics of interest for students could be modern machinery and equipment, advanced technologies and modern measures of technical diagnosis.

On the other hand, interviewed students show to be interested mainly (25 students out of 30 interviewed) in Module 3-1 and less (4 students) in Module 2. As for the major topics to be covered, they are as follows:

- maintenance and reparation of agricultural machinery and equipment (1/3 of students);
- machinery management (4 out of 30 students);
- diagnosis of machinery (3 out of 30 students);
- labour protection/security technique (3 out of 30 students);
- machinery with automat control (1 student).

For Module 2 and 3-1 not less than 60 students need to be trained as mentioned by representatives of educational institutions, but, ideally, it would be great to train all students (that is more than 1,000 students). On Module 3-2, designed to operators, mechanics, technicians and researchers, administrative staff of educational and research institutions need to be trained around 17 people, while a representative of Agricultural State University would like to train entire staff (that is about 30 more people). At least 22 teachers need to be trained on Module 3-3. Other 15 people could be trained on labour security, as asked by the administrative staff of State Station for Machinery Testing.

Acceptable length of trainings for Module 2 and 3-1, according to half of administrative staff of educational institutions is 20 days, while some interviewees mentioned 60 days. One interviewee asked 30 days for Module 2 and other one 7 days for Module 3-1. Almost all students interested in Module 2 and almost half of the students interested in Module 3-1 agree with length of 20 days. At the same time 1/3 of students interested in Module 3-1 desire 30 days of training, while 4 out of 25 students asked 60 days. Taking into account all options provided by students and administrative staff, we suggest to offer trainings on Module 2 for a period of 20 days and on Module 3-1 for 30 days.

In case of Module 3-2 the options on training length mentioned by administrative staff of educational and training institutions varies from 5 to 60 days and for Module 3-3 – from 10 to 60 days. The optimal length, in the opinion of research team, could be 15 days for Module 3-2 and 20 days for Module 3-3.

When being asked about the acceptable time of trainings, the administrative staff of the Agricultural Technical College from Svetlii agreed with timing proposed in the questionnaire for Module 2 and 3-1 – *from medium of February to medium of December* and, respectively, *from June to July, and September*, while the administrative staff of College in Soroca accept whole studying year for trainings (September-May). The administrative staff from University mentioned both summer and winter seasons.

As for the students, majority of those interesting in Module 3-1 agreed totally or partly on months *June to July, and September*. The others mentioned winter and spring months. Half of students interested in Module 2 indicated months September and October.

The suggestion of research team for trainings organizers is to keep timing *from June to July and September* for Module 3-1 and *September, October* for Module 2.

The same situation is with timing for Module 3-2 and 3-3 – to keep timing provided in advance: *from February to May, and from October to medium of December*; as half of administrative staff from educational and research institutions agreed with this timing and 1/3 of other interviewed staff mentioned months included in this timing (February-October and January).

All interviewed administrative staff of educational and research institutions intend to continue the same job with higher skills after trainings at the National Training Centre for Agricultural Mechanisation. Generally, it was confirmed that in most cases the trained staff could benefit from higher salaries after trainings or, in some cases, of higher position. Some administrative staff from educational institutions mentioned that the outcome of trainings is reduced only to the improvement of teaching quality.

As for future plan of students after training, the majority of them were not decided yet at the time of interviewing. 1/4 of students plan to work in agricultural field, while 1/10 intends to continue education (those from colleges).

The majority of students are motivated for participation in trainings by expectations to get new knowledge and skills that could help them to get employment easier and with higher salaries. 1/10 of students hope to graduate easier from educational institutions, while one student consider that trainings could help him to start own business in agricultural field.

The interviews with students emphasized the 2/3 of them don't like to pay personally for trainings and agree to participate only on the institution account. Almost 1/4 of students agree to pay a certain fee for trainings. However, the most of them mentioned fees that could be hardly considered as serious (1,500-5,000 MDL). The other students indicated acceptable fees of 200-300 MDL.

As for willingness of administrative staff to pay for trainings, it was found out that State Station for Machinery Testing and Agricultural Technologic College from Svetlii would like to benefit free of charge from trainings. The representatives of Agricultural Technologic College from Soroca agree to pay for trainings, but it was difficult for them to note an amount because it depends of the available financial resources after all basic costs to be done for college activity. Only administrative staff of Agricultural State University mentioned concrete amount – $2 per hour for teachers and $1.5 per hour for students, researchers and technicians.

The additional requests of administrative staff of educational and research institutions to the National Training Centre for Agricultural Mechanization are as follows:

- to open as soon as possible
- to train the personnel of research institution
- to assess quality of testing procedures
- to train young specialists, so that they wouldn't migrate and can work with modern equipment in Moldova
- to provide equipment for maintenance
- to provide specialized literature, inclusively video educational materials
- to conduct researches for PhD personnel and include them in the researches
- to allow students to have access to modern equipment
- to provide Agricultural College from Soroca with modern equipment so that it could activate as Centre representative in the northern part of republic
- to train students in the field of machinery maintenance and reparation based on modern technology
- to train students for free and to give them opportunity having some trainings abroad
- Centre should be equipped with modern tools for maintenance and reparation

The requests of interviewed students are the followings, in descending order of frequencies:

- to provide trainings focused on practice with modern machinery and equipment (1/3 of students)
- to provide access to whole range of modern agricultural machinery (6 students)

- to provide access to specialized literature on modern machinery and equipment (2 students)
- to offer opportunity to have practice abroad (2 students)
- to focus rather on efficiency and quality than on quantity (1 student)

Some students mentioned requests concerning how the Center should activate, what should be its target beneficiaries and its training staff: to open branches in the country (3 students); to employ trainers with high professional experience (3 students) and to provide services mostly to rural inhabitants.

E. CONCLUSIONS AND RECOMMENDATIONS

I. Conclusions

Profile of Target Groups

Agricultural Producers

- 47.5% of interviewed agricultural producers are *small farmers*, in terms of farmland area; having up to 50 hectares. Every fourth interviewed agricultural producer is a *medium-size farmer*, having 51-500 hectares of farmland. Other quarter of interviewed producers is *large size farmer*, who work on more than 501 hectares of farmland.
- The most often produced agricultural products in Moldova are *crops* (84.3% of interviewed farmers), *maize* (76.6%) and *sun flower* (76.3%). Almost half of farmers (44.7%) deal also with *fruits*, while every third farmer (31.1%) – with *vegetables*.
- 40% of all interviewed agricultural producers confirmed they have profits from the agricultural activity, while 27% don't have incomes on this activity and register only losses.
- 26.2% of interviewed agricultural producers benefited from, or currently are beneficiaries of 2KR project. More beneficiaries of 2KR project are from southern (30.6% out of interviewed farmers located in the southern region) and northern (29.4%) regions of the country. Depending on the size of agricultural producer, large (56.1%) and medium-size (30.9%) farmers are those benefiting mostly from 2KR project. The highest share (41.1%) of 2KR project beneficiaries was registered in 2004. 92% of 2KR beneficiaries are satisfied with machines and equipment procured through the assistance of 2KR project.
- 41.2% of interviewed agricultural producers don't have workers, mainly family-type small landed farmers. Every fourth producer (27.0%) is medium size farmer, having from 11 to 50 employees in 2007. 13.7% are small farmers with no more than 10 employees –in 2007.
- Negative turnover of personnel is a significant problem faced by agricultural producers, as 25.5% of companies encountered such troubles in 2005 and 33.9% in 2006, while the share of new employees is always less (26% of new employees for 100% going out in 2005, 13.6% in 2006 and 14.6% in 2007). The most often mentioned reasons for employees' resignation are *voluntary resignation* and *retirement*.

Farm Mechanisation Service Providers

- The most Farm Mechanisation Service Providers (87.3%) are located in rural areas. The services area of Farm Mechanisation Service Providers, when comparing past-present-future plans, registers an extension-oriented trend.
- The largest type of businesses who use services provided by mechanisation service providers are family-type small landed farmers: 87.3% in the past and 93.7% in present.
- 31.8% of companies are small companies with no more than 10 employees; 58.8% are medium size companies, having from 11 to 50 employees and 9.4% are large companies with more than 50 employees. During the period of 2004-2007 it was assessed a continuous decreasing trend for small companies and increasing one for medium size companies.
- The highest proportion of service staff by average age is represented by medium age specialist (36-45 years old), with an average share of 53% in companies' service staff turnover for the period of 2004-2007. The percentage of young specialists (20-35 years old) is 14.3% in 2007;

while the elder specialists (46-55 years old) represent 22.3% in 2007 (old age staff is registered only in rural areas). Survey findings attest faster increase of old age service staff, comparing with young service staff.

- Farm Mechanisation Service Providers are directed mostly to employees with professional secondary education (on average 62% of companies) and practical skills (on average 40%).

Manufacturers, Dealers of Agricultural Machinery and Reparation Service Providers

- Services provided by the manufacturers/dealers/reparation service providers cover entire territory of the country. Besides this, some companies extended or plan to extend their collaboration with Romania, Russia, Azerbaijan, Nigeria and Marocco.
- The share of service staff in total staff turnover of companies varies from 50% to 75%. The average age of service staff for the most companies varies from 34 to 40 years old.
- The most companies request employees who graduate from professional colleges or universities.

Educational and Research Institutions

- The subjects' areas taught in educational institutions refer mainly to agricultural mechanization, electro-mechanics, transport engineering and technology, auto transport, management in agriculture, machinery management. As for research institution, it is involved in testing and assessment of agricultural machinery conformity.
- During the period of 2004-2007 it was attested a positive flow of students in educational institutions specialized in farm mechanisation subjects.
- Main qualification request to new teachers and researchers is to be graduated from at least professional college; while for technicians is acceptable professional secondary education. However, in both cases preference is granted to employees with higher education.

Available Machinery and Problems Encountered

- 78.1% of interviewed farmers use their own machinery and equipment; while 21.9% (all of them being family-type small landed farmer) don't have their own machinery and rent it when need to perform farm mechanisation works.
- Agricultural machinery and equipment used by agricultural producers, Farm Mechanisation Service Providers and educational institutions in present is mostly the one produced in such countries as Russia, Ukraine, Belarus and Moldova. The tendency of using machinery from CIS manufacturers remains stable for the nearest future.
- A research finding with respect to available machinery is that, comparing with past period, dealers of agricultural machinery extended the range of machinery manufactured in such countries as USA, Germany, Japan and Italy.
- 72.9% of farmers use in present up to 50 units of agricultural machinery and equipment. The main way of agricultural machinery procurement in the past and present was a traditional one – *cash*, as being mentioned by 32.1% of respondents for 2004 and 22.7% for present; while in the future the agricultural producers intend to buy machinery mainly *in leasing*, as attested by 31.9% of respondents.
- Machine parts are procured mainly from specialized shops. Needed parts from overseas manufacturers are procured mainly for machinery produced by other than CIS manufacturers, like Germany, Italy etc.
- The most unsatisfactory state of agricultural machinery and equipment was registered for whole range of machinery and equipment produced in Russia, Ukraine and Moldova (tractors, combines, seeding and spraying machines, cultivator, plough and other equipment), according to over 60% of companies dealing with the above mentioned machinery assessed it as *fair* or *bad/very bad*. The main reason for assessment of machinery as bad or very bad is than machinery is old and frequently is out of order.
- 81.0% of agricultural producers and 69.8% of Farm Mechanisation Service Providers face financial problems; while 62.9% of farmers and 49.3% of Farm Mechanisation Service Providers encounter problems related to machinery (mainly because most of used machinery is

old, machine spare parts are not qualitative and expensive). At the same time, more than 30% of agricultural producers need *maintenance machines* and *shop*, as well as *facilities for motor reparation*.

- 14.1% of agricultural producers and every fourth Farm Mechanisation Service Provider face troubles with employees' skills and knowledge, mainly because of the lack of young specialists (old personnel), low level of qualification of available staff that, inclusively, don't allow dealing adequately with modern machinery.

Training Needs and Requests

Agricultural Producers, Farm Mechanisation Service Providers and Dealers of Agricultural Machinery

- 70.5% of agricultural producers, 93.7% of Farm Mechanisation Service Providers and majority of dealers of agricultural machinery are very interested in receiving training in the field of agricultural mechanization.
- 59.9% of interviewed farmers, 79.4% of Mechanisation Service Providers and all dealers of agricultural machinery desire the training course named *Preventive Maintenance (general ideas on basic farm management and repair/maintenance)*. Additionally, 49.6% of agricultural producers (or 67.2% of those who have their own agricultural machinery) need training services on reparation of motors for machines produced by foreign manufacturers (except CIS manufacturers). 54.7% of Farm Mechanisation Service Providers desire topics on machinery maintenance and reparation, especially modern one.
- Cumulative number of people needed to be trained reach to 1090 staff of agricultural producers, 218 staff of Mechanisation Service Providers and 31 staff of dealers of agricultural machinery for training course on *preventive maintenance (general ideas on basic farm management and repair/maintenance)*.
- The acceptable length of training is up to 10 days, as 74.1% of agricultural producers and 65.7% of Mechanisation Service Providers interested in training need no longer trainings.
- The acceptable timing for training is winter season, particularly *December to February*, according to 89.5% of farmers; *November to March*, according to 61% of Mechanisation Service Providers and *January to February* for the most dealers of agricultural machinery.
- The acceptable fee for trainings would be no more than 500 MDL per a trained person of agricultural producers' staff and no more than 1,000 MDL per a trained person of Mechanisation Service Providers' staff.
- The main request of agricultural producers and Mechanisation Service Providers to the NTCAM refers to the need on information and trainings on innovative technology (inclusively the machinery that is offered on the Moldovan market) and progressive methods for machine reparation.

Educational and Research Institutions

- Desirable training courses for:
  - ✓ operators, mechanics, technicians and researchers is mostly the course focused on *specific and modern knowledge on repair and maintenance of agricultural machinery* (Module 3-2);
  - ✓ teachers – *new approaches and technologies on maintenance and repairs of agricultural machinery* (Module 3-3);
  - ✓ students – *deeper knowledge on modern techniques for repair and maintenance* (Module 3-1).
- Number of potential trainees for each Module is as follows:
  - ✓ Module 3-1 – from 60 to more than 1000 students;
  - ✓ Module 3-2 – from 17 to 47 people;
  - ✓ Module 3-3 – at least 22 teachers.
- Acceptable length of trainings for each Module is as follows:
  - ✓ Module 3-1 – 20-30 days;
  - ✓ Module 3-2 – 15 days;
  - ✓ Module 3-3 – 20 days.

- Acceptable timing of trainings for each Module is as follows:
  - ✓ Module 3-1 – June to July and September;
  - ✓ Module 3-2 and Module 3-3 – February to May, and October to medium of December.
- In the most cases, educational and research institutions asked to benefit from trainings free of charge, while most students desire to attend courses only on the account of the educational institution.
- The main request of students to the NTCAM is to provide trainings focused on practice with modern machinery and equipment.

II. Recommendations

Analysis of results from the national research on agricultural producers, farm mechanisation service providers, manufacturers/dealers of agricultural machinery and reparation service providers, as well as educational and research institutions indicates the following practical recommendations that would contribute to the improvement of NTCAM activity and services provided:

- NTCAM should start its activity as soon as possible, taking into account that most actors involved in agricultural activity (over 70%) need trainings in the field of agricultural mechanisation.

- Trainings should be focused mainly on management, maintenance and reparation of modern agricultural machinery and equipment, as the research attested gaps in employees' skills and knowledge in this area.

- The main target group of NTCAM should be young specialists.

- The acceptable length of training courses for agricultural producers and farm mechanisation or reparation service providers, as well as dealers, should be no more than 10 days. For educational and research institutions trainings can be organized during 15-30 days, depending on the complexity of applied training modules.

- Trainings should be organised mainly during winter months for agricultural producers and farm mechanisation service providers.

- NTCAM is advised to implement a payment procedure by instalments, as majority of target groups (over 60%) face financial problems. At the same time, it is welcome to provide trainings in regional centers, as it would reduce transportation costs for participants.

- Besides training services, NTCAM is recommended to provide or create branches for selling of high-quality spare parts for agricultural machines and equipment, as many agricultural producers emphasized the issue of low quality of machine parts provided by existent specialized shops.

APPENDIX-7 TRAINING CURRICULA

TRAINING CURRICULUM 1

Module 1: Farm Management / Preventive Maintenance
Target Group: Agricultural Producers (Farmers)
Objective: To provide general guidance and knowledge on basic farm management and maintenance of agricultural equipment. The trainees will be playing a leading role in mechanization process at their workplaces by applying knowledge obtained through the training.
Training Method: Classes are conducted in classrooms, workshops, and the machine yard of the Center by using AV equipment, workshop equipment and tools, and agricultural machinery.
Duration: 40 hours

CONTENTS:

(A) Training in the Center (Chisinau)

No.	Subject	Contents	Necessary Equipment
1	General Guidance on Mechanization	Theoretical and practical elements of agricultural machinery functioning processes of incorporation, feeding, and harvesting crops. Constructive solutions, technological regulations, and use of agricultural machinery.	Item Nos. 9.1.1 - 9.20.1, Items No. 11.1 - 11.5 (including video, brochures and other materials purchased by PIU-2KR).
2	Modern Agricultural Machines	Adjustment, preparation and application of agricultural machinery and machinery systems in modern technologies of growing crops and plantations.	Item Nos. 9.1.1 - 9.20.1(including video, brochures and other materials purchased by PIU-2KR).
3	Farm Management	Essential factors of agricultural production management and economic analysis of agricultural enterprise activity. Planning for effective use of machinery and equipment. Economic efficiency in rendering agricultural services.	Equipment bought by PIU-2KR.
4	Accounting and Management	General knowledge of accounting and management. Importance of book-keeping and its analysis. Liabilities under signed contract.	Equipment bought by PIU-2KR.
5	Preventive Maintenance	Principles of preventive maintenance. Daily and periodical maintenance. Significance of keeping record of operation and maintenance of machinery, Practice of preventive maintenance: washing and cleaning of machines, testing of hydraulic system, engine performance, wheel alignment.	Item Nos. 1.1.1 -1.11.1; 3.1.1-3.12.1; and 4.1.1-5.10.2.
6	Practice of Preventive Maintenance	Practice of preventive maintenance: appropriate usage of tools for disassembling/ assembling, welding.	Item Nos. 2.1.1 - 2.17.1; and 6.1.1-7.11.10.

(B) Field training

No.	Subject	Contents	Necessary Equipment
1	Fundamentals of Combine Harvester	Fundamentals of combine harvester. Precautions for safety operation & maintenance. Design and performance of main units of harvester and their adjustment for proper operation.	Item No. 9.1.1
2	Fundamentals of Tractor	Fundamentals of tractor and its implement. Precautions for safety operation & maintenance. Design and performance of main units of tractor. Theory of three point linkage. Proper matching of implement for tractor.	Item Nos. 9.3.1 - 9.20.1

TRAINING CURRICULUM 2

Module 2: Machinery Operation
Target Group: Students (compulsory/optional), Active farmers/operators/ mechanics (optional)
Objective: To provide practical skills to operate modern farm machinery so that students may understand the machinery by linking theoretical and practical. Students will be skilled with daily maintenance, and safety driving-operating techniques in the field. Students will be entitled to apply for the state driving license of Category-H. Active farmers, operators, and/or mechanics will benefit from this course in terms of safe and effective skills of operation.
Training Method: Training will be conducted for daily maintenance, attach/detach of implements, safe and efficient driving-operating techniques, adjustment of parts during operation for each agricultural work. Training contents are adjusted by the season.
Duration: 240 hours (in the case of compulsory)

CONTENTS:

No.	Subject	Necessary Equipment
1	Field training guidance: farm mechanization and work elements, and actions; principles of preventive maintenance; daily and periodic maintenance; safety of agricultural works; practice of operation and maintenance record book.	
2	Basic training in tractor operation and traction.	Item No. 9.4.1 (with appropriate implements)
3	Cereal crops harvesting operations (mainly for cereal, corn, sunflower)	Item No. 9.1.1 (with relevant headers)
4	Straw baling operations	Item Nos. 9.4.1, 9.7.1, and 9.19.1
5	Plowing	Item Nos. 9.4.1, and 9.8.1
6	Harrowing , cultivation , soil preparation operations	Item Nos. 9.4.1, 9.10.1, and 9.17.1
7	Drilling operations	Item Nos. 9.4.1, and 9.12.1
8	Spraying operations	Item Nos. 9.4.1, and 9.11.1
9	Planting operations	Item Nos. 9.4.1, and 9.15.1
10	Transplanting	Item Nos. 9.4.1, 9.16.1, and 9.20.1

Note 1) Compulsory for students of Agrarian Univ. and Agr. Colleges depending on department they are enrolled. Optional for other students and active farmer, operators, and mechanics.

Note 2) For university students educational curricula of Agrarian Univ. will apply.

Note 3) In each operation practical training on repair and maintenance of machinery is included.

TRAINING CURRICULUM 3

Module 3-1: Repair & Maintenance (for Students)
Target Group: Students
Objective: To give students deeper and practical knowledge on modern techniques for repair and maintenance of agricultural machinery. Students will obtain ready-to-work techniques as mechanics at agricultural producers and agricultural service providers, and users' capability to repair the machinery will be enhanced.
Training Method: Practical trainings for whole process of repair are conducted at the workshops of the Center, using the machinery and equipment brought in for repair.
Duration: 160 hours

CONTENTS:

No.	Subject	Contents	Necessary Equipment
1	Basic Preventive Maintenance	Technological process of agricultural equipment repairs. Acceptance for repair, technical requirements and technical documentation in equipment repairs.	
2	Repair and Maintenance	Structure of technical maintenance, control, and repair system, and the role of diagnosis in fault-finding.	Item Nos. 4.1.1 - 4.1.3
3	Washing Process	Physical and chemical elements of washing. Classification of cleaning solutions. Composition and concentration of cleaning solutions, their peculiarities. Washing and cleaning methods, their peculiarities. Washing process and environmental precautions.	Item Nos. 1.1.1 - 1.11.1
4	Dismantling Process	Systematic dismantling of machinery and necessary precautions. Effective use of various jacks. Right usage of manual tools for dismantling. Control and sorting of parts.	Item Nos. 2.1.1-2.17.1, 7.2.1
5	Testing after Dismantling	Testing of dimensions, adjustment of distortion, testing of cracks.	Item Nos. 4.3.1-4.17.2
6	Assembling Process	Development and estimation of total assembling processes. Layout chart. Organizational forms of total assembling. Preparation and carrying out of complete assembling works.	Items No 2.1.1-2.17.1
7	Balancing of Machine	Static and dynamic balance. Correct usage of balancing machine.	Item Nos. 7.9.1 , 7.10.1
8	Repair of Combine Harvester	Procedures for assembling combine harvester. Diagnosis of their troubles.	Item Nos. 2.1.1 - 2.17..1,
9	Repair of Tractor	Procedures for assembling tractor and implements. Diagnosis of their troubles.	Item Nos. 2.1.1 - 2.17..1,
10	Testing and Diagnosis	Modern technology of agricultural machinery testing and diagnosis: 1)hydraulic system; 2)diesel injection pump; 3)engine performance; 4)wheel alignment.	Item Nos. 3.1.1 - 3.12.1
11	Painting Process	Painting technology and practice. Preparatory works, kind and property of painting material, painting process and drying	Item Nos..8.1.1 - 8.5.1
12	Reconditioning of Engine	Crankshaft regrinding, boring and honing of cylinder liner, reconditioning of valves and valve seat, reconditioning of fue.	Item Nos. 6.1.1 - 6.33.1
13	Welding Technology	Theory of welding: characteristics of welding rods and the right preservation, change of base metal by welding, applicable welding to repair work. Welding practice: arc welding, CO2 welding, gas	Item Nos. 6.14.1 - 6.17.1
14	Repair of Tire and Tube	Repair and replacement of damaged tire and tube.	Item Nos. 7.1.1 − 7.1.5, 7.3.1, 7.7.1 − 7.9.1
15	Repair Works of Brake System	Replacement/polishing of break shoe, turning of disk, honing of break cylinder.	Item Nos. 7.11.1 - 7.11.10
16	Repair of Electrical System	Testing of electrical equipment, testing, adjusting and charging of battery, testing of starter.	Item Nos. 5.1.1 - 5.10.2
17	Repair of Hydraulic System	Testing and repair of membrane feed-pumps, injection pumps and agricultural hydraulic equipment.	Item Nos. 6.28.1 − 6.30.1, 6.33.1, 6.32.1 − 6.32.2

Note) Course contents for university students are based on the subject "practice in machine repair" of the Agrarian University.

TRAINING CURRICULUM 4

Module 3-2: Repair & Maintenance (for Mechanics)
Target Group: Mechanics
Objective: To give mechanics (and operators) specific knowledge on repair and preventive maintenance of modern agricultural machinery. Mechanics will obtain appropriate techniques and capacity to identify cause of fault, and will be able to repair the machines quickly at their working place.
Training Method: Practical training for specific subjects is conducted at the workshops in the Center. Since target group comprises of experienced mechanics, emphasis is placed on the topic with higher needs including reconditioning of engine and repair of hydraulic system.
Duration: 40 hours

CONTENTS:

No.	Subject	Contents	Necessary Equipment
1	Preventive Maintenance	Significance and scheduling of preventive maintenance for agricultural machinery. Daily maintenance practice. Washing and cleaning of machines. Maintenance and repair of wheel and brake.	Item Nos. 1.1.1 -1.11.1
2	Modern Technology of Maintenance & Repair	Modern technology of maintenance & repair of agricultural machinery: 1)appropriate disassembling /assembling ; 2)modern welding for repair work.	Item Nos. 2.1.1 - 2.17.1, 6.14.1 - 6.16.2, 7.1.1~ 7.11.10
3	Modern Technology of Testing and Diagnosis	Modern technology of agricultural machinery testing and diagnosis: 1)hydraulic system; 2)diesel injection pump; 3)engine performance; 4)wheel alignment.	Item Nos. 3.1.1 - 3.12.1
4	Reconditioning of Engine	Reconditioning of engine : crankshaft regrinding, boring and honing of cylinder liner, reconditioning of valves and valve seat, reconditioning of fuel injection pump.	Item Nos. 6.1.1 - 6.33.1

TRAINING CURRICULUM 5

Module 3-3: Repair & Maintenance (for teachers)
Target Group: Teachers
Objective: To provide teachers with new approaches and technologies on maintenance and repairs of agricultural machinery by connecting specific practical training and theories. Teachers will be able to upgrade the pedagogical methodology of theoretical classes at the schools.
Training Method: Practical trainings for whole process of repair are conducted at the workshops of the Center, using the machinery and equipment brought in for repair.
Duration: 40 hours

CONTENTS:

No.	Subject	Contents	Necessary Equipment
1	Principles of Preventive Maintenance	Significance of modern preventive maintenance and the networking.	
2	Periodic Maintenance	Scheduling of maintenance work and diagnosis of machine trouble.	Item Nos. 4.1.1 - 4.1.3
3	Washing Process	Cleaning and washing technology. Washing and cleaning methods, their peculiarities. Coating and environmental precautions.	Item Nos. 1.1.1 - 1.11.1
4	Dismantling and Assembling Process	Dismantling and assembling of agricultural machinery. Handling of major elements. Control and sorting of parts.	Item Nos. 2.1.1-2.17.1, 7.2.1
5	Painting Process	Painting material and property, painting facility and equipment, painting process, safety and environmental precautions.	Item Nos. 8.1.1-8.5.1
6	Testing of Parts	Testing of parts before and after repair.	Item Nos. 4.1.1-4.17.2
7	Reconditioning of Engine	Boring and honing of cylinder liner, polishing of crankshaft.	Items No 6.1.1 - 6.33.1
8	Welding Technology	Practice in arc welding, CO2 welding, gas welding, and safety control method.	Items 6.14.1 - 6.16.2
9	Total Performance Testing	Testing of diesel injection pump/nozzle and performance of reconditioned engine, analysis of exhaust gas, and wheel alignment.	Items No. 3.1.1 - 3.12.1

Note) This course is conducted only in the first year of operation at the Center.

APPENDIX-8 REFERENCES

	Title	Q'ty	Issuing Agent	Contents
1	Answers to the Questions	1	PIU-2KR	A set of answers to the questions raised by the Basic Design Study Team of JICA (2007)
2	Survey on the Training Needs at the National Training Center for Agricultural Mechanization	1	UniAgroProtect	Results and analysis of the needs survey of over 500 samples conducted by a local consultant (2007)
3	Improving Public Expenditure Efficiency for Growth and Poverty Reduction	1	The World Bank	Review and analyses of the current public expenditure, and recommendations (2007)
4	Country Programme Action Plan 2007-2011	1	Government of Moldova/United Nations Development Programme	Situation analysis of assistance to Moldova, and proposals for a medium term development (2007)
5	Development and Implementation Results of the 2KR Projects	1	PIU-2KR	Record of “hire purchases” of farm machinery under the 2KR projects (2007)
6	Statistical Yearbook of the Republic of Moldova 2006	1	National Bureau of Statistics	A set of recent official statistical data of Moldova (2006)
7	Agricultural Machinery in Use in the Republic of Moldova (in Moldovan)	1	Ministry of Agriculture and Food Industry	Record of agricultural machinery in use and purchased during 1990-2004 (2005)
8	United Nations Development Assistance Framework 2007-2011	1	Government of Moldova/United Nations Development Programme	Framework of mid-term overall assistance by the UN group organizations (2005)
9	Law on Education	1	Government of Moldova	Regulatory document on the Moldovan system of education (1995)

(Note) Only major documents are listed. Those already collected through the Preliminary Studies are excluded from the list.