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| Country Name | The Project for Modernization of Agricultural Mechanization Center in Damanhour |
| Egypt        |   |

**I. Project Outline**

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|---------------------|--|----------------------------------|
| Project Cost        | E/N Grant Limit: 792 million yen   | Contract Amount: 790 million yen |
| E/N Date            | June 2007  |                                  |
| Completion Date     | October 2008   |                                  |
| Implementing Agency | Agricultural Mechanization Sector (AMS), Ministry of Agriculture and Land Reclamation (MALR)   |                                  |
| Related Studies     | Basic Design Study: February - October 2006 / Detailed Design Study: March 2007 - February 2008  |                                  |
| Contracted Agencies | Consultant(s)  | Sanyu Consultants Inc.           |
|                     | Contractor(s)  | Dai Nippon Construction          |
|                     | Supplier(s)  | Sojitz Corporation               |
| Related Projects    | Sinbelawin Agriculture Mechanization Center in Dakahlia Governorate (Grand Aid, 1984-1987)   |                                  |
| Background          | <p>The agricultural sector in Egypt accounted for 13.9% in the total GDP in 2005, and 30% of the employed population in Egypt was engaged in the sector. The majority of farmers used "agricultural machinery hiring service" provided by 6 agricultural mechanization center (AMC) and 126 agricultural mechanization stations in whole country established by Ministry of Agriculture and Land Reclamation (MALR). However, since there was no agricultural mechanization center with any repair facility or training facility in Beheira Governorate in the west delta (the project's target area), the number of broken machinery was increasing due to longer time for repairing and insufficient technical capacity of operators and mechanics. Such situation caused failure to meet farmers' demand for the agricultural machinery and, as a result, affected agricultural productivity in the area.</p> |                                  |
| Project Objectives  | <p>Outcome</p> <p>To establish the supporting system of promoting agricultural mechanization in Beheira Governorate by modernization of the Damanhour Agricultural Mechanization Center (DAMC).</p>  |                                  |
|                     | <p>Outputs(s)</p> <p>Japanese Side:</p> <ol style="list-style-type: none"> <li>Construction of Facilities <ul style="list-style-type: none"> <li>Workshop building, training building, staff building, tractor shelter, and adjunct facilities</li> </ul> </li> <li>Procurement of Equipment <ul style="list-style-type: none"> <li>Equipment for workshop and training</li> </ul> </li> </ol> <p>Egyptian Side:</p> <ol style="list-style-type: none"> <li>To secure land for the project and to clear, level and reclaim the land</li> <li>To provide facilities of electricity, water supply and drainage in and around the project site</li> <li>To maintain and use the facility and equipment provided by the project as well as to assign staff for operation and maintenance of the facilities and equipment</li> </ol>  |                                  |

**II. Result of the Evaluation**

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| Summary of the Evaluation   |
| <p>Since the farmers in Beheira Governorate in the west delta did not have a sufficient accessibility to agricultural machinery hiring service in their locality, they were forced to do farming in the disadvantageous condition such as delay of harvesting and cultivating period, and reduction of productivity. This project was aimed at upgrading the existing Agriculture Mechanization Center in Damanhour (DAMC) from a machinery renting station to a modern center which provides key services to project beneficiaries such as (i) renting of agriculture machinery, (ii) maintenance of the machinery at a workshop and (iii) training for the staff and operators for a comprehensive agriculture machinery service.</p> <p>The project has realized expected positive effects such as provision of training to farmers, reduction of time for repairing agricultural machinery by construction of facilities and provision of equipment at DAMC. Also DAMC as well as its subordinating hiring stations have become able to provide stable agricultural machinery rental service to farmers in Beheira Governorate because the number of workable machinery has been increased due to improvement of maintenance capacity of DAMC. As a result, the project has positive impacts on increase in agricultural production and productivity and farmer's income.</p> <p>As for sustainability, this project has no problem in structural and technical aspects, but problems are observed in terms of financial aspect of the implementing agency and current status of operation and maintenance due to Ministry of Agriculture and Land Reclamation (MALR)'s budget cut as well as revenue decrease from agricultural machinery rental service and training to farmers influenced by the Revolution in January 2011. For relevance, the project has been highly relevant with Egypt's development policy, development needs, as well as Japan's ODA policy at the time of both ex-ante and ex-post evaluation. For efficiency, both the project cost and the project period were within the plan</p> <p>In the light of above, this project is evaluated to be satisfactory.</p> |

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| 1 Relevance  |
| This project has been highly relevant with Egypt's development policy ("to increase agricultural productivity for food |

security” in the 5<sup>th</sup> Socio-Economic Development Plan 2002/03-2006/07 and the Sustainable Agricultural Development Strategy towards 2030), development needs (“to promote agricultural mechanization in Beheira Governorate”), as well as Japan’s ODA policy “the Japan’s Country Assistance Program for Egypt” with priority area of poverty alleviation and improvement of living standards at the time of both ex-ante and ex-post evaluations. Therefore, relevance of this project is high.

## 2 Effectiveness/Impact

The project has largely achieved its objectives of strengthening DAMC’s function as a regional center for agricultural machinery rental service to farmers, maintenance of agricultural machinery as well as technical trainings. The rate of workable machinery in the target area improved from 85.5% in 2006 to 91.0% in 2011 and 92.0% in 2012 as a result of reduction of time for repairing and capacity improvement through staff training. The number mostly met the target value of 94.4% while, in parallel with this project, AMS/MALR have increased agricultural machineries (e.g. tractors and combines) at DAMC and neighboring 19 Hiring Stations under the administration of DAMC from 485 in 2006 to 1,143 in 2012. The average time for repairing one machine at DAMC improved remarkably from 90 day in 2006 to 60 days in 2011 and 50 days in 2012, although it has not yet fully achieved its target value of 36 days. As a result of the above improvement, DAMC together with its subordinating 19 Hiring Stations have become able to provide stable agricultural machinery rental service to farmers in Beheira Governorate after the project.

Also the project has a positive effect on improvement of DAMC’s training function through the facility construction and the equipment procurement, as training courses for farmers were organized 46 times with 1,380 participants in 2010/2011 (the Egyptian fiscal year: from July to June) and 26 times with 780 participants in 2011/2012 (the Egyptian fiscal year). In contrast, the training courses for AMS staff who engaged in operation and maintenance of agricultural machinery at centers were organized only one time a year in 2011 and 2012. The participants’ numbers were also limited to 20 persons in 2011 and 12 persons in 2012, which was far below the target value of 400 participants. The main reason for this was that after the Revolution January 2011 in Egypt, demonstrations and strikes of AMS staff calling for permanent jobs took place in DAMC, and DAMC was not able to organize expected number of training courses for the staff under such difficult political and social situation. Nevertheless, DAMC could successfully provide the machinery rental and repairing service as well as farmers training by mobilizing its staff who is equipped with knowledge and skills through past staff trainings. This helped to promote the utilization of agricultural machinery by farmers.

To sum up, although DAMC has not implemented the expected number of training courses for AMS staff, it has been sufficiently performing its key roles to provide stable agricultural machinery rental service, maintenance of the machinery, and farmers training in Beheira Governorate.

The project has positive impacts on increase in agricultural production and productivity and farmer’s income. According to the interview survey to the farmers in the target area, they have increased both production volume and productivity of certain crops such as sugar beet, clover and summer maize by hiring rental machinery from DAMC and hiring stations. Adopting agricultural machinery farming after the project enabled them to: (i) save seeds quantity, (ii) save agricultural labor time, (iii) reduce losses of harvested crop to the minimum, and (iv) reduce cultivation and harvesting costs. These advantages have contributed to increase of farmer’s income. No negative environmental impact was observed and no land acquisition as well as no resettlement of people were conducted.

Therefore, effectiveness of this project is fair.

### Quantitative Effects

| Indicator(unit)  | baseline value<br>(2006) | target value<br>(2011) | actual value<br>(2010/2011) | actual value<br>(2011/2012) |
|--|--------------------------|------------------------|-----------------------------|-----------------------------|
| <b>Indicator 1</b><br>Rate of workable machinery in the target area (%)  | 85.5                     | 94.4                   | 91.0                        | 92.0                        |
| <b>Indicator 2</b><br>Average time for repairing one machine (days)  | 90                       | 36                     | 60                          | 50                          |
| <b>Indicator 3</b><br>No. of training courses for farmers (no. of course /year)  | N/A                      | 10                     | 46                          | 26                          |
| <b>Indicator 4</b><br>No. of farmers who received the training at DAMC (no. of person/year)  | N/A                      | 200                    | 1,380                       | 780                         |
| <b>Indicator 5</b><br>No. of training courses for AMS staff who engaged in operation and maintenance of agricultural machinery (no. of course /year) | N/A                      | 20                     | 1                           | 1                           |
| <b>Indicator 6</b><br>No. of AMS staff who received the training at DAMC (no. of person/year)  | N/A                      | 400                    | 20                          | 12                          |

Note 1: The project target area is 578,000 ha of farmland in Beheira Governorate and the number of target farm families is 255,400.

Note 2: Indicator 1: Rate of workable machinery in the target area (%) = (No. of workable machinery (i.e. tractor and combine) in the target area) / (Total no. of machinery in the target area including unusable machinery and machinery under repair and maintenance).

Note 3: DAMC is responsible for management of 19 Hiring Stations located in the three General Administrations such as (i) Beheira, (ii) El Aradi & El Gededa and (iii) Wadi & El Natron.

Note 4: The Egyptian fiscal year starts 1st July and ends 30th June.

## 3 Efficiency

The inputs were appropriate for producing the outputs of the project, and both the project cost and the project period were within the plan (ration against the plan: 99% and 68%). Therefore, efficiency of this project is high.

## 4 Sustainability

The facilities/equipment provided by the project are maintained by Agricultural Mechanization Sector (AMS) of Ministry of Agriculture and Land Reclamation (MALR), while Damanhour Agricultural Mechanization Center (DAMC) carries out operation and maintenance (O&M) activities in the field level. DAMC is responsible for O&M of 19 Hiring Stations located in the three General Administrations (Behera, El Aradi & El Gededa, Wadi & El Natron) with total 179 staff. The majority of DAMC staffs are equipped sufficient technical skills for O&M with over 20 years of working experience, and conduct scheduled maintenance including the preventing maintenance based upon established O&M manuals. Its inventory management for spare parts is properly done by DAMC. While total budget allocated to AMS has been dropped around 34% for 3years from 2008 to 2010, and especially after the Revolution in January 2011. As a result, AMS has problems of securing necessary O&M budget because (i) demonstrations and strikes by the staff negatively impacted on its business such as renting of agricultural machinery and trainings for farmers, which in turn affected the revenue of DAMC, and (ii) MALR made a significant cut of its budget for AMS/DAMC operations. Although all the facilities and equipment provided by the project are in good condition and fully utilized so far, the budget cut affects purchase of spare parts and maintenance work for some machinery.

This project has no problem in structural and technical aspects, but problems are observed in financial aspect of the implementing agency and current status of operation and maintenance. Therefore, sustainability of this project is fair.

### III. Recommendations & Lessons Learned

#### Recommendations for Implementing agency

In order to keep the facilities and machineries provided by the project in good condition for farmers' convenience, MALR is recommended to consider increasing the budget to AMS for the operation and maintenance.

#### Lessons learned for JICA

Provision of necessary facilities/ equipment to reinforce past JICA's assistance is effective. In the project, the implementation agency has rich human resources in both the local and the central levels, which is supposed to be a result of the past JICA technical cooperation projects and training. As a result, the project maintains relatively favorable effects even after the completion.



Machineries after repair at DAMC



Equipment at DAMC workshop