

**Climate-Resilient Rice Commercialization Sector Development Program
(Rice-SDP) ADB Loan 3007/ Grant 0349**

Ministry of Economy and Finance

**CONCEPT PAPER ON IMPLEMENTATION OF PADDY DRYING AND STORAGE
FACILITIES**

A. Introduction

1. Under the Climate-Resilient Rice Commercialization Sector Development Program (Rice-SDP) a loan from the Asian Development Bank (ADB) and a grant from the Global Agriculture and Food Security Program (GAFSP), provided to the Royal Government of Cambodia (RGC), are being used to support the implementation of the feasibility study, detailed design and construction of Paddy Drying and Storage (PDS) facilities located in major rice production areas of the country. The Rice SDP is operating in three provinces which have high levels of rice production, namely Battambang, Kampong Thom and Prey Veng.

2. The Ministry of Economy and Finance (MEF) is the Executing Agency for the Rice-SDP and the Ministry of Agriculture, Forestry and Fisheries (MAFF) is the Implementing Agency for this activity. The MAFF/National Implementation Office (MAFF/NIO) will be responsible for monitoring the progress of the establishment of the PDS facilities in each province.

3. The Rice-SDP will allocate a total of USD 10.5 million (around 3.5 million per target province) towards the establishment of the PDS facilities. Each of the target provinces will get around USD 1.5 million for the drying facilities (grain handling equipment) and USD 2 million for storage facilities (civil works) from the GAFSP grant and ADB loan respectively. Additional funds will be provided for the hire of consultants for the conduct of feasibility studies, preparation of detailed designs and supervision of construction. The funds for the construction of the PDS facilities will be made available through concessional loans and the Rural Development Bank (RDB) will be involved as a representative of the MEF to collect the loan from the rice millers in accordance with a loan agreement to be signed between RDB and rice millers.

B. Background

4. During the design of the Rice-SDP, the inadequate capacities of the post-harvest infrastructure to handle the increasing volumes of wet paddy were identified as a serious constraint to achieving any reduction in the flow of wet paddy to Thailand and Vietnam often at discounted prices for subsequent drying and processing. Furthermore, the volumes of paddy being supplied to the markets are increasing due partly to expanded areas of production but most significantly due to the increasing use of mechanized harvesting driven by the lack of and increasing cost of labour and farmers need to dispose of their wet paddy immediately after harvest. The infrastructure to handle, dry and store, and transport the volumes of wet paddy is not sufficiently developed despite significant private investment in drying, storage and milling facilities in recent years. The paddy surpluses that occur at peak times are cleared, often at discounted prices, across the border for processing to prevent quality deterioration and hence in-country value retention is limited.

5. The increasingly widespread use of mechanised harvesting of paddy has resulted in a greatly reduced duration of harvest time. The advantage of this is the reduction in the losses that occur as harvesting is delayed beyond two weeks after maturity. Furthermore, harvesting losses are minimised by harvesting one to two days before paddy maturity. However, this practice results in much higher moisture content which can be as high as 30

percent. With high moisture contents the paddy very rapidly deteriorates under the typical ambient temperatures in Cambodia. Thus, it is imperative that paddy must be dried as quickly as possible after harvest to preserve the quality of the grain and the storage life. Whilst the moisture content of the wet paddy remains above 20 % it can be stored for only a few days.

6. Considering the requirement for quick drying immediately after harvest to a moisture content that is safe for temporary storage, a two-stage drying system offers some advantages. A typical 1st stage dryer takes advantage of different drying rates during the two drying stages and that surface moisture can be removed rapidly from very wet paddy without causing damage to the grains by using very high temperatures for a short period. After this rapid pre-drying to a moisture content of 18% to 20% the grain can be dried by slow column drying in the 2nd stage to a moisture content of 13% to 15%. For commercial scale production, this can only be achieved by using column dryers with either batch circulating or continuous flow mixed dryers. An alternative to the continuous flow type dryer is the Louisiana State University (LSU) dryer which is widely used in Thailand and Vietnam due to its suitability for long grain paddy such as Phka Romdoul. This is the second fastest dryer, after the fluidized bed dryer, which requires less service and maintenance, and provides more flexibility in the drying temperatures applied than the batch circulating type dryer. Modern drying systems also incorporate programmable logic control and touch screens for monitoring and adjusting the drying parameters to achieve ISO standards if needed.

7. Apart from the electric power that is needed to drive all the motors, one of the core components in the drying facility is the heat source for drying. As an alternative to the use of fossil fuels the husk burner can be used, while gas flue burner has the disadvantage of producing unstable hot air temperatures so there is an additional need for a heat exchanges which will add to the cost of the investment and the increased fuel cost of operating.

8. For the purposes of designing the facilities, some basic design parameters need to be established. The proposed facility should be designed for handling long grain paddy, and will need to have a capacity of at least 500 tons per day measured from the intake pit, will run continuously for 3 - 4 weeks per season equivalent to 10,000 tons.

C. Selection of qualified rice millers

9. An invitation for Expressions of Interest (EoIs) will be advertised for rice millers who are interested to be engage in the PPP arrangement for expansion of their PDS facilities in the three target provinces and who satisfy the following criteria:

- ✓ Experience in the rice milling sector for a minimum of 5 or more years with evidence of successful operation of rice processing and activities including procurement of paddy supplies through contract farming or other arrangements.
- ✓ Evidence of company registration documents, trading and export licenses.
- ✓ Audited accounts for the past three years.
- ✓ Good credit rating and evidence of access to sufficient finance to provide for purchase of wet paddy for processing including bank statements and bank guarantee.
- ✓ Existence of modern management practices in terms of technical knowledge and financial management using double entry book-keeping methods.
- ✓ Commit to have sufficient land to build the PDS facility, if successful. Depending on the scale of operation, the total land requirement may vary in between 3 to 3.5 ha, including future expansion for milling and double the drying facilities with full options.

- ✓ Commit to include households farming within the area of influence of the drying and storage facility, either through casual buying of paddy or under contractual supply arrangements; and engage/hire local labour for any unskilled labour requirements for construction/ handling/ other activities as needed by the PDS facilities.
- ✓ Agreement to provide regular reports including financial reports under the PPP agreement. The reports should include number of farmers/workers benefitted from or engaged in the PDS facility and incomes earned by them.

10. A guide to the preparation of the EoI will be prepared and posted to the Rice-SDP website to provide further guidance to the interested rice millers. A meeting will be organized in each province approximately one week after the advertisement is placed to provide an opportunity for interested rice millers to receive further guidance on the preparation of the EoI; the procedures for shortlisting; the conduct of the feasibility studies; and the content of the proposed PPP agreements. Rice millers who submit EoIs do not have to be based in the target provinces, but the PDS facilities must be constructed in one of the three target provinces.

D. PDS Selection Committee

11. A PDS Selection Committee will be formed by the Rice-SDP PMO in cooperation with the MAFF/NIO and the three Provincial Implementation Offices (PIOs). The Committee will be involved in the entire PDS procurement process starting from the evaluation of Expression of Interest (EoI), selection of civil works contractor, and the procurement of equipment for facilities in the three provinces. The PDS Selection Committee will have the following composition:

- ✓ PMO Program Director (Chairperson)
- ✓ MAFF/NIO Program Director (Vice-Chairman)
- ✓ PMO Program Manager (Secretary)
- ✓ MAFF/NIO Program Coordinator (member)
- ✓ PIO Program Director (member) (respective directors to join when procurement is done for their province)

12. The EoIs that are submitted by the interested rice millers will be evaluated and ranked by the PDS Selection Committee. A procedure for the screening and scoring of the EoIs will be developed by the PMO which will help the PDS Selection Committee to assess and shortlist at least three eligible EoIs from each province and rank them so that detailed feasibility studies can be carried out as per the ranking.

E. Preparation of PDS facility feasibility studies

13. The MAFF/NIO will recruit a firm to conduct the feasibility studies for the shortlisted rice millers in each province. The consultants that are hired will spend time in each province to work with the shortlisted rice millers in order of ranking to complete the feasibility studies and prepare full technical proposals which will examine the viability of the proposed operations and assess the management and financial capacity of the rice millers.¹ The consultants will commence working in Battambang province and from there

¹ The project conducted feasibility studies and prepared draft designs for the PDS facilities in the three target provinces during the PPTA phase. These draft designs will be used as a reference document by the

move to Kampong Thom and finally Prey Veng province. The results of the feasibility studies will be reviewed by the PDS Selection Committee to determine whether the proposed facilities are viable and whether the rice miller has the financial and management capacity to successfully operate the facilities.

F. Formulation of the PPP Agreement

14. The PMO will prepare a draft format for PPP agreement before placing advertisement to invite the EOI from rice millers. In case the draft is not ready at the time of advertisement, the PMO will make sure of its availability before the end of the EOI submission period. Whilst the consultants are conducting the feasibility studies, the PMO will prepare draft PPP agreements that are appropriate for supporting each of the PDS facilities. Based upon the accepted definition by the Royal Government of Cambodia a PPP represents a long-term contract between a private party, in this case a rice miller, and a government agency, which will be the MEF, for providing a public asset or service, in which the private party bears significant risk and management responsibility. The PPP agreements will be based on the establishment of a PDS facility to be constructed for a rice miller (either integrated into an existing mill complex or as a stand-alone facility) and financed through a long term concessional loan to build/operate/reimburse the facility.

G. Preparation of PDS detailed designs and equipment specifications

15. MAFF/NIO will deploy consultants who have been recruited for the preparation of the detailed designs and specification of equipment for facilities. The consultants will come up with the final cost estimates for the construction of civil works and procurement of grain handling equipment. The detailed designs along with the final cost estimates for the proposed facilities will be the basis for the negotiation of the concessionary loan through RDB. These consultants will also be responsible for supervising the construction of the PDS facility by the rice miller.

H. Implementation of PPP Agreement

16. The PPP agreements will be signed between the MEF/PMO, selected rice millers and RDB, with representatives from MAFF/NIO and the respective PIO witnessing the agreement. The PPP agreement will contain the details of the concessionary loan terms that are to be provided through the RDB. The agreement will establish the warrantee conditions to avoid default/break of the agreements by the successful rice millers

17. The concessionary loans will be provided to the rice millers through the RDB with a loan duration of eight years and an interest rate of five percent. There will be a grace period of three years with no interest charged or repayment required. The loan will be managed by the MEF/PMO through the RDB who will be engaged through a letter of agreement (LoA)².

18. The MEF/PMO, RDB and relevant parties will establish appropriated procedures, mechanisms or supporting documents needed to be able to allow RDB to record the concessionary loans in their loan system. After the award of contract to construction or

firm/consultants.

² A Letter of Agreement between PMO and RDB on the loan management will be prepared and submitted to ADB for prior review. Loan repayments and the revenue generated from this activity will be set aside and utilize for similar types of activities to sustain the benefits and/or to ensure development of agriculture sector in the future.

equipment installation firms during which precise loan amount is clearly known, a loan agreement will be signed between RDB and rice miller, in which RDB will be a representative of the MEF to collect the loan from the rice miller in accordance with the loan agreement.

19. Each selected rice miller will be required to submit an application for the concessionary loan to the MEF/PMO through RDB following established procedures. After the loan has been approved, procurement and implementation of the civil works construction of the storage and drying facility and installation of the grain handling equipment based upon the specifications in the detailed designs can be initiated. The method of payments for the construction of civil works and procurement of equipment, and arrangements for progressive payments to the contractors/suppliers will be determined and defined in the PPP agreement. The MEF/PMO will make payments directly to the contractors upon request and after endorsement by the supervision consultant/engineer, the rice millers and RDB.

20. The MEF/PMO will be fully responsible for recruiting contractors and awarding civil works contracts, and for the procurement of grain handling equipment based upon the detailed designs that have been produced by the consultants recruited by the MAFF/NIO. In order to maintain transparency, the rice millers will be made a member of the bid procurement review committee. The MAFF/NIO consultants will be responsible for supervision of the construction and installation of equipment to ensure that design specifications are followed.

21. In all cases the participating rice millers will be required to provide regular quarterly reports of progress and participate in six monthly reviews organized jointly by the PMO, MAFF/NIO and PIO which may involve representatives from ADB/CARM also. Since the loan durations will extend beyond the life of the Rice SDP the MEF will establish a mechanism for providing continuing monitoring of the operation of the facilities and the loan repayments after 2020.

I. Others

22. The PMO will review the levels of expenditure of the available funds after the first PPP agreements have been signed and reach a decision of the optimal use of the residual funds to support additional PDS facilities in one or more provinces.

23. The allocation per target province (around USD 3.5 million) as reflected in para 3 is contingent up on (i) submission of EoIs from interested rice millers who want to construct the PDS facilities in the target province; (ii) results of the feasibility studies determining viability of the proposed operations; and (iii) the management and financial capacity of the rice millers who want to construct the facilities in the province. In cases where the facilities could not be constructed due to lack of one or a combination of above points, resources may be suitably reallocated to other target provinces.

24. The tentative schedule for implementation of this activity is as follows:

Tasks to be done by the joint PMO-MAFF Selection Committee	Expected time frame	Tasks to be done by MAFF	Expected time frame
1. Establish the Selection Committee for Rice millers/PPP Operators	October 2016	1. Assistance on proposal preparation to be given by MAFF with PIC Assistance.	March 2017
2. Finalizing the Concept note in which the selection criteria and objectives of the storage and drying facility construction and operation are clearly indicated	December 2016	2. Recruit the Feasibility Study, Detail Engineering Design and construction supervision (FSDDCS) team	April 2017 (mobilization)
3. Invite Eols from interested Rice millers/PPP Operators.	January 2017	3. Contract Awards for civil work	by June 2018
4. Finalization of LoA with Rural Development Bank (RDB)	February 2017	4. Completion of Construction activities	by December 2018
5. Shortlist of interested Rice millers/PPP Operators.	February 2017	5. Contract Awards for grain handling equipment	by October 2018
6. Request for proposal from the shortlisted millers.	March 2017		
7. The selection committee evaluates the proposal and ranks them.	April 2017		
8. Contract negotiation with top ranked millers with number of site per province to be decided by the selection committee and prepare the contract agreement.	May 2017		
9. Signed LoA with RDB	May 2017		
10. Signed contract with Millers/Operators	June 2017		