

Paddy Production in Muda Area: From Individual Based to Commercial Farming

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Introduction

The Muda Irrigation Scheme is one of eight designated paddy granary areas in Malaysia. It is located on the coastal alluvial plains in the States of Kedah and Perlis, in the northern Peninsular Malaysia. It has a total cultivated area of 96,558 hectares which are tended mostly by an ageing 53,100 farmers. The average seasonal net yield is 5.0 ton/ha, higher than the national average of 3.74 ton/ha. Muda represents 23% of national rice cultivation area but accounts for almost 40% of national rice production.

This paper will give a background on the development of Muda Irrigation Scheme in terms of irrigation and drainage infrastructure. It will cover the transition of farmers' practice from individual household based to a community based farming and its current form which resembles a commercial entity on its own right. This paper highlights the key challenges faced by the farmers and the efforts undertaken to meet the challenges. It also describes the great efforts undertaken by the government to transform the agriculture sector into a competitive, productive and knowledge intensive sector. Some of the issues or challenges are inadequate infrastructure, water deficit, recurring flood and competition from abroad due to liberalization of the economy.

The Muda Irrigation Scheme

The Muda Irrigation Scheme was launched in 1970 with the aim of providing irrigation and drainage infrastructures to enable 53,100 farmers undertake paddy double cropping in Muda Area. The project incorporated a macro layout of irrigation, drainage and farm roads network up to secondary level. With a canal density of 10m/hectare the infrastructure provided soon proved to be inadequate as the canals and drains were too far apart (i.e. 1 to 2 kilometers).

The Tertiary Irrigation Development Project (Muda II) was launched in 1979 to increase the density of irrigation and drainage infrastructure up to 30–35 m/hectare. The objective of the tertiary system was to provide farmers with direct access to irrigation, drainage and farm roads for effective on-farm water management and activities. The Muda II has thus far covered 44 irrigation blocks scattered over the entire Muda Area comprising 34,989 (36%) hectares. That means there are over 64% (61,569 hectares) of paddy land within the Muda Area still with inadequate infrastructure.

The Role of Farmers' Organisation in Paddy Farming

The 96,558 hectares of Muda Area was divided into 172 irrigation blocks with an average size of 560 hectares/block. However, the farmers were organized based on their farm community to form 491 Small Agriculture Units (Unit Pertanian Kecil, UPK) which in turn grouped to form 27 Farmers' Organisation (FOs). The first FO was established in 1974 under the Farmers' Organisation Act 1973.

Since formation the FOs had ventured into the business of distributing fertilizers and selling other agricultural inputs to the farmers.

3.1 Participatory Irrigation Management

The idea of self governance or participation in irrigation management was formulated in the Muda II project. With the implementation of the tertiary project, it was envisaged that the farmers would play a greater role in irrigation management, operation and maintenance. The farmers' were expected to carry out operation and maintenance of tertiary structures namely field irrigation turnouts (FITs) and drainage outlets (DOs). In addition the farmers were also expected to undertake clearing works of tertiary channel with no financial input from government. The clearing of the primary and secondary channels is contracted out to the Farmers' Organisation. Over the years, the operation and maintenance of the irrigation and drainage infrastructures eventually became the sole responsibilities of government through MADA.

However, the farmers through its representatives played an active role in determining the irrigation schedule with MADA's officers for every cropping season.

3.2 The Transition from Individual Farming To Commercial Entity

3.2.1 The Establishment of Group Farming (Kelompok)

The farming activities started as individually-based and the farmers often helped out each other on the more laborious and taxing activities like transplanting and harvesting. MADA had put a lot of effort to organize farming activities by forming small grouping of farmers' known as "Kelompok" (a sub-set of UPK) as early as 1979. The aim was to coordinate planting activities and to provide members with a pool of labourers to help carry out the on-farm activities. The farms are managed individually by owners/tenants.

3.2.2 Semi Estate Project

In 1983, Syndicated Group farming (Semi Estate Project) was introduced. It involved the active participation of Farmers' Organisation (FOs), Malaysia Agricultural Bank (Bank Pertanian Malaysia, BPM) and National Paddy Authority (Lembaga Padi dan Beras Negara, LPN). Under this group farming, credit facilities were extended to the group while the marketing (purchases) of paddy were undertaken by LPN. In

this regard, the FOs act as an intermediary and sometime as guarantor between the farmers and the creditors.

3.2.3 Paddy Estate Project

The idea to cultivate paddy on commercial basis began in 1999. The objective of getting a higher productivity and better returns was getting into the mainstream. The Semi-Estate projects were converted into Paddy Estate with centralized management. The farmers let the FOs fully manage and operate on their fields. However reluctant farmers and lack of incentives is slowing the expansion of the project.

3.2.4 National Key Economy Area (NKEA) Package for Paddy

The government has recently launched (2010) an entry-point project (EPP) under the National Key Economy Area (NKEA) with the objective to create a large scale rice production in the Muda Irrigation Scheme. Under this project, fragmented and small-scale farms are to be integrated and clustered into a large scale agri-business with central management with full support from the government. The implementation of the program will be in stages with a progressive increment of 5,000 hectares every year from 2011 to the 2020 target of 50,000 hectares. A Special Purpose Vehicle (SPV) with strong farmers' interest will act as a main operator and employ existing operators or farmer cooperatives to manage these large farms.

The operation of tertiary structures will be the responsibility of the Estate Management. Eventually, the operation and maintenance of irrigation & drainage infrastructures and road network for both the secondary and tertiary irrigation area will be the responsibility of the Estate Operator. In essence, irrigation management transfer will be part of the estate management.

MADA will establish a subsidiary that will be involved in the entire rice value chain, from seed supply to rice processing and wholesaling. The subsidiary will be co-owned by farmers and other private sector stakeholders.

Current Issues and Challenges in Muda Area

a) Inadequate Irrigation and Drainage Infrastructure

A significant portion of the Muda Area (61,569 hectares) still lacks tertiary infrastructure. Although double cropping of paddy can be implemented in the area, lack of the ability to fully control water in the field. The capacity to regulate inflow and drainage is necessary to accommodate field activities such as broadcasting seeds or application of fertilizers.

The provision of tertiary irrigation and drainage facilities like FIT and DOs where every farmer has direct access to irrigation water or the drain is very much sought by the farmers since it enables flexible field water management.

b) Muda Area as a water deficit area

Since 1979, there have been 13 water resources studies carried out for the Muda Area. They all concluded that the State of Perlis, Kedah and Penang is a water deficit area in the northern region of Peninsular Malaysia. Sg. Kedah basin where the Muda Scheme is located was simulated to be facing water deficit once in 3 years.

c) Non-Economy of Scale Operation by Farmers

Individual farmers still operate fields averaging about 2 hectares and therefore cannot take advantage of the economies of scale which would provide lower operation costs, more bargaining power and better yields.

d) Recurring Flood Events

Northern Peninsular Malaysia receives heavy rainfall during the monsoon transitions and early stage of north east monsoon between the months of September and December every year. The rainfall results in elevated river water levels and increased standing water in the paddy fields, and flooding in the Muda Area.

In the period 1970s–1990s, flood was a rare occurrence in the Muda Area. However in the 2000s it has become almost an annual event. Since 2005, the frequency of floods increased from once to 2 or 3 times a year. In 2007, flood occurred 3 times in Muda area, i.e. during September, October and December. Similar flooding events occurred in 2008, 2009, 2010 and 2011 with areas up to 25,404 hectares affected.

Solution to Issues and Challenges

a) Provision of Tertiary System to Muda Area

Under the NKEA program, the Government has agreed to allocate RM 2.2 billion over a period of 10 years (2011–2020) to upgrade the irrigation and drainage infrastructure to achieve the density of 30-35m/hectare. MADA will undertake the project so that the whole Muda Area will be equipped with the infrastructure up to the tertiary level.

b) Reuse of Drainage Water

Surface run-off from the rice field into rivers and drainage network in the scheme is estimated at 800mm annually. With a conservative 25% extraction, the annual amount of water that can be reused is 193 million m³. At present there are 99 pumping stations that reuse drainage water with a total capacity 67 cumec. Reuse of drainage water has contributed between 6-10% of total water requirement and contributed towards delivering reliable and quality service to the farmers. Since 1993, Muda Area did not experience any episode of water deficit that may affect the paddy crops.

c) Commercial Farming

Under the NKEA project which is under implementation, fragmented and small-scale farms will be integrated and clustered into a large scale agri-business with a central management. The program with government assistance will eventually cover 50% of Muda Area by the year 2020. The farmers' would then be able to take advantage of economy of scale and venture into the whole value chain of rice industry.

The existence of paddy estate management as an empowered water user would arrest the problems of water allocation, distribution, and efficiencies prevalent in the field.

d) Flood Mitigation Project

A study on Sg. Anak Bukit and Sg. Kedah in 2005 (DID, 2006) proposed 2 new diversion channels to divert the excess river flow that may cause flood in Muda Area.

A Northern Diversion will divert flows from Sg. Bata into Sg. Baru with the discharge outlet at Sg. Kubang Rotan to relief the town and its surrounding paddy areas in Jitra and Alor Setar from flooding. A Southern Diversion will divert flows from Sg. Padang Kerbau/Sg. Pendang into the new Sg. Limau Diversion to reduce flooding in Pendang and Kota Setar District.

The projects will be implemented in phases and preliminary works for the northern diversion has already started.

Conclusion

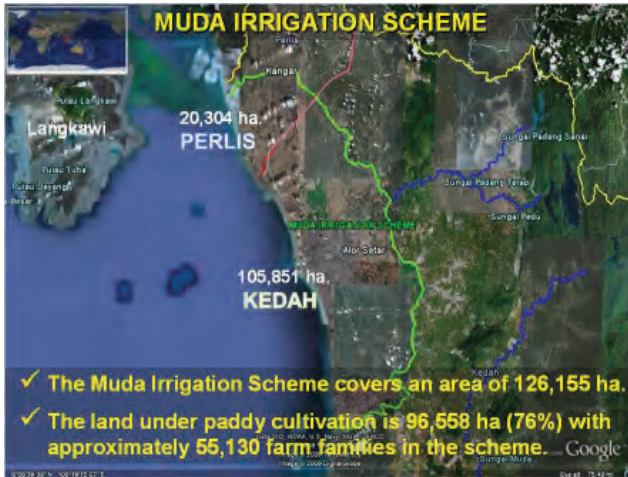
The farmers in Muda Area have come a long way from individual based farming to a farmer-owned commercial farming entity with an eye towards the whole value chain in the rice industry. The NKEA project in the Government's Economy Transformation Programme will transform The Farmers' Organisations (FOs) into a profitable and enduring business entity. It will increase the paddy production, reduce production cost and increases the farmers' income and at the same time, contribute towards achieving self-sufficiency for national food security.

However the NKEA project is only aimed at 50% of the Muda Area leaving the remaining 50% still to create conducive business environment for greater private participation in the agri-food industry as envisaged in with the National Agri-Food Policy (2011–2020).

Reference:

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Transition of Farming Groups for Paddy Cultivation in the Muda Area

Project	Year of Launch	Number of Project	Area Involved (hectare)	Number of Farmers Involved (person)
Kelompok	1979	116	5,527	4,479
Semi Estate	1986	155	5,748	3,944
Paddy Estate	2002	310	15,297	9,756
NKEA	2011	78	5,026	2,932

