



DAIRY SECTOR IN MALAYSIA: A REVIEW OF POLICIES AND PROGRAMS

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INTRODUCTION

Malaysia relies heavily on imports to satisfy its domestic demands for dairy products. In 1970, the import value of dairy products was RM69 million and increased to RM1.2 billion in 2014. Although milk production has increased over the past four decades, Malaysia is still unable to meet the dairy demand of its population. Between 1990 and 2005, consumption of fresh whole milk increased by 33% from 32.9 kg per capita to 43.5 kg per capita (Boniface & Umberger, 2012). The rising awareness of consumers on the nutritional benefits of dairy products coupled with increasing preference towards dairy-derived products has contributed to the increase in demand for dairy products in Malaysia. The rising demand of dairy products has driven and continues to drive the government to formulate policies and suggest steps to meet this need. With this in mind, this paper aims to offer an overview of the initiatives taken by the government in assisting the nation to manage its dairy import bill.

Production strategy

Animal husbandry

Since the early 1970s, the government has made efforts to reduce Malaysia's dependence on imported dairy products. Dairy colonies were set up in Selangor and Negeri Sembilan, and large-scale dairy farms were established in Johor, Kelantan, Terengganu, Sabah and Sarawak during the First, Second and Third Malaysia Plans. These plans, respectively set five-year strategic directions for Malaysia. The first Malaysia Plan began in 1966. The purpose of these farms and colonies was to increase local milk production. Cattle crossbreeding programs were adopted in these farms and temperate breeds were introduced to develop the dairy sector. The main dairy

cattle population in Malaysia was initially the Local Indian Dairy (LID), which adapted well to the local climate and thrived well on low nutritional inputs, but unfortunately, LID experienced low milk yields (Panandam & Raymond, 2005). To overcome low yields of LID, F1 Friesian-Sahiwal crossbreds from New Zealand and Australia were imported (Dijkman, 1992). There were considerable milk yield differences between these two breeds. LID was able to offer only 3.0 kg/cow while Friesian-Sahiwal crossbreds offered 6.1 kg/cow (Devandra & Wanapat, 1986). Talukder *et al.* (2003) revealed that the Friesian-Sahiwal crossbred cows offered good milk composition and quality. Sivarajasingam and Kumar (1989) showed that milk and reproductive performances of dairy cattle can be significantly improved by crossbreeding LID or improved local Zebu cattle with the Friesian gene pool, especially at the 60% level of Friesian inheritance. Nevertheless, despite the various breeding programs to increase production of fresh milk from cattle (Figure 1), Malaysia's self-sufficiency level (SSL) for milk was only 5% in 2012, and this could be attributable to population increase. Unable to meet the rising demand, SSL remains stagnant.

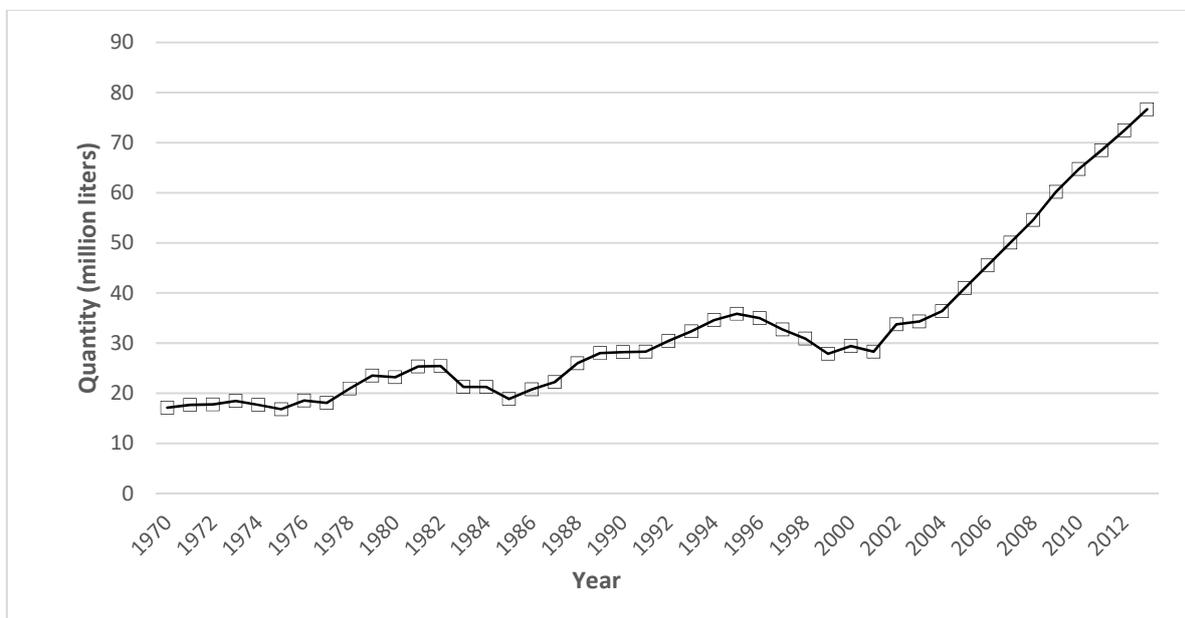


Figure 1: Fresh cow milk production in Malaysia

Source: FAOSTAT, 2014

National Dairy Development Program

Historically, the dairy sector has received more government attention than in the recent past. In 1974, the National Dairy Development Program (NDDP) for smallholders was launched under the New Economic Policy within the Second Malaysia Plan (1971-1975). During the implementation of the NDDP, the Department of Veterinary Services (DVS) provided a range of services, to assist dairy farmers. These services include training, supervising, providing assistance in obtaining loans, testing, transporting, storage, and marketing of milk (Dijkman, 1992). Nineteen milk collection centers (MCC) closely located to nearby production areas were established during the Third Malaysia Plan (1976-1980) to stimulate production of fresh milk. During the Fourth Malaysia Plan (4MP), in the early 1980s, the total number of MCCs increased

to 43. As reported in the 5th Malaysia Plan (1986-1990), milk production increased three-fold during the 4MP period, from 8.3 million liters to 28.9 million liters. An ultra-high temperature milk processing plant was also set-up in Johor during the 4MP to process fresh milk. In the 1980s, the government began to place higher emphasis on industrialization, privatization, and trade. As a result, the agriculture industry in general and the dairy sector in particular had to take a back seat. Dairy development projects were scaled-down and the large number of MCCs were consolidated to be more cost-effective and for easier maintenance. The creation of the NDDP increased the SSL for milk from 0.4% in 1974 to 5% in 1994. However, as priority in agriculture shifted towards cultivation of high value crops beginning mid-1990s, it became less important to develop the dairy sector, a sector in which Malaysia has no comparative advantage. When the Asian financial crisis hit in 1997, there was an urgent need to enhance food security and the government quickly responded by formulating the 3rd National Agricultural Policy (NAP3), for the 1998-2010 period. The NAP3 was a revised version of the 2nd National Agricultural Policy (1992-2010). Under NAP3, efforts were made to revive and develop the dairy sector to increase SSL in milk so as to decrease the nation's dependency on imports. However, the specifics on increasing SSL in milk were left upon agencies within the Ministry of Agriculture. There was no clear direction, approaches or strategies outlined to increase the SSL of milk or dairy products. The National Agro-food Policy 2011-2020 (DAN) followed after the NAP3 period ended and the focus was reiterated to ensure sustainable production for food security and safety. Under DAN, attempts to reduce reliance on imported dairy products continued and marketing of dairy products will be strengthened through the establishment of distribution centers along with the use of communication technologies to access market information.

Trade strategy

Trade strategy was adopted when local milk production was not up to par with milk demand. When initiatives were set up to increase milk production, the government supported the dairy sector by posing restrictions on entry of imported milk and milk products (Malcolm, 1999). However, as a result of inadequate government support beginning 1980s, dairy processors started to rely heavily on imported products. As a result, tariffs rates on dairy products were much lower as compared to other foods and dairy import licenses became more readily obtained. The applied tariff for some dairy products such as skim milk and whole milk powder were zero in Malaysia (Warr *et al.*, 2008). Figure 2 shows the balance sheet for various dairy products in Malaysia since 1994. Data for prior years are unavailable. Suntharalingam and Ahmad (2015a) adopted the food balance sheet model to demonstrate the current dairy security within the Malaysian dairy sector. They reported that in recent years, among seven dairy product types, Malaysia is self-sufficient in two, i.e., sweetened and concentrated milk and cream, and yogurt. Malaysia's production of yogurt was all time high in 1994 and has reduced since then. Production of sweetened and concentrated milk and cream has increased over the last four years.

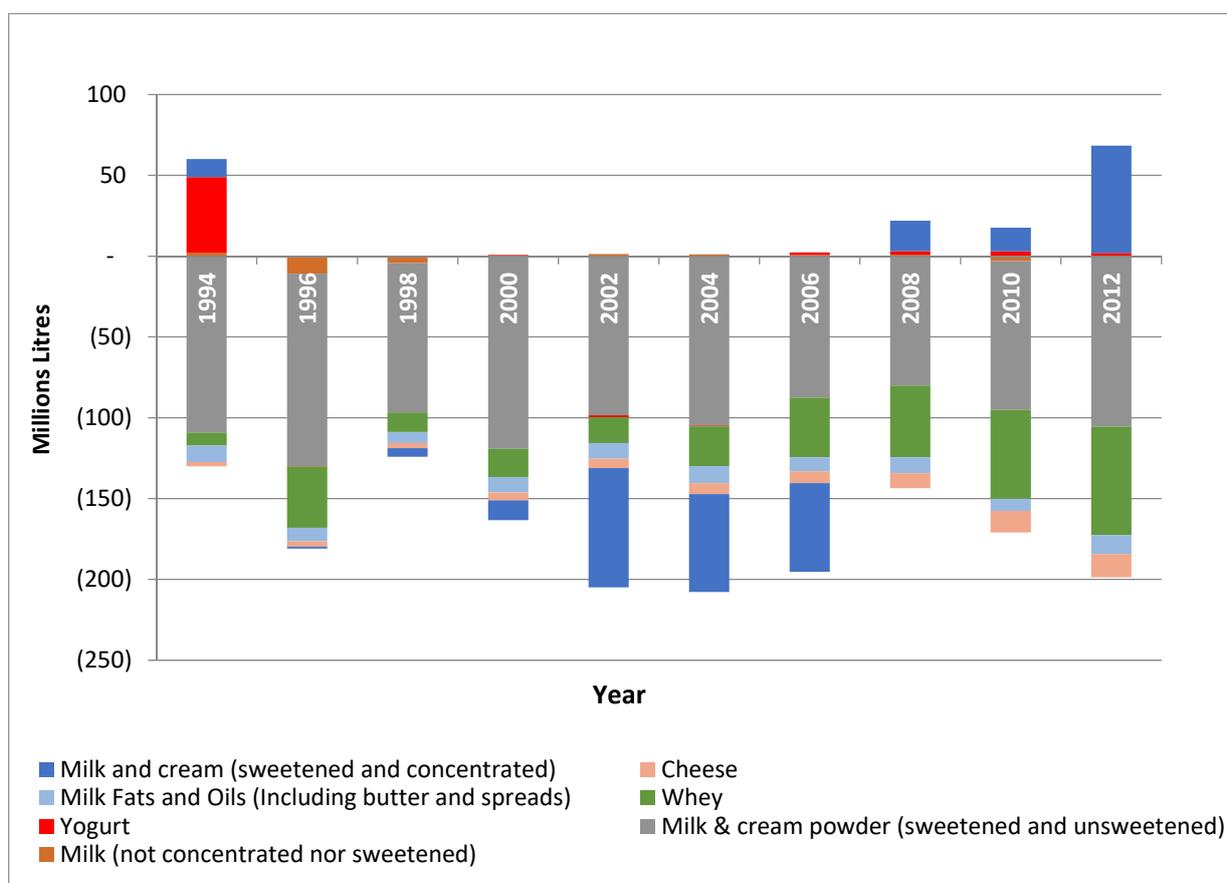


Figure 2: Food Balance Sheet for Various Dairy Products in Malaysia

Source: COMTRADE, 2015

To compensate for the insufficient production of the other five dairy products, Malaysia imports from various countries (Table 1). By diversifying import sources, Malaysia is not reliant on one country for dairy products supply. Adoption of such a strategy assists in mitigating risk especially during a food crisis.

Table 1. Top three import sources of dairy products

Dairy products	Primary Import source	Secondary Import source	Tertiary import source
Milk (not concentrated nor sweetened)	Australia	New Zealand	United States
Milk and cream powder (Sweetened and unsweetened)	New Zealand	United States	Australia
Whey	New Zealand	France	United States
Milk fats and oils	New Zealand	Australia	France
Cheese	Australia	New Zealand	United States

Source: COMTRADE, 2015

Integration Strategy

In current time, to meet the adequate dairy sufficiency levels, the government formulated proposals in establishing strategic partnerships with foreign based companies under the Economic Transformation Program (ETP). These partnerships will be formed via two Entry Point Projects (EPP) which falls under the Agriculture National Key Economic Areas (NKEA):

1. EPP13: Partnering with a large foreign dairy company to establish dairy clusters in Malaysia. This project aims to increase SSL of milk, improve consumer perception of the local dairy sector and ensuring a steady purchaser.
2. EPP16: Investing in foreign cattle farms. This project aims to ensure a steady supply of dairy animals

The aims of these EPPs are to integrate fragmented small farms into clustered large scale agri-business producing higher value added dairy products. The intentions are for the goals to be achieved with the assistance provided by established anchor companies via technological and knowledge know-hows. According to the ETP 2014 Annual Report, there are currently 281 farmers under EPP13, with 198 farmers considered as smallholders (less than 30 cattle). The report indicates that EPP13 has shown encouraging progress but the main challenge is the competition from imported milk which is offered at a much lower price compared to local fresh milk.

Challenges in the dairy sector

Insufficient base population and dispersed nature of imported dairy cattle, low lactation and reproduction performance of imported dairy cattle, inconsistent supply of quality feed, harsh environmental conditions (Koh, 1975; Lingam *et al.*, 1977; Sivarajasingam and Kassim I., 1974), high cost of quality feed and poor farm management (Shanmugavelu and Azizan, 2006) were reasons cited contributing to low milk yields.

The challenges concerning the dairy sector can be classified as follows:

1. *Lack of skills and training* - In the 1970s and 1980s, smallholders were completely new to livestock husbandry management. One of the main constraints of developing the dairy sector was inadequate training provided to farmers. The shortage of trained manpower at all levels lead to poor hygiene and milking techniques, resulting in the rejection of milk by MCCs (Dijkman, 1992).
2. *Low breed performance and inadaptability to local environmental conditions* - The dairy animals' low genetic potential for milk production contributed to the low production levels. Initially, in the 1950s, DVS attempted to upgrade local LID cattle by crossing it with Red Sindhi and Sahiwal from India and Pakistan, but these breeds lacked dairy qualities (Panandam & Raymond, 2005). The importation of purebred dairy cattle like Friesian and Jersey to increase milk production was also deemed as a failure as the local climate in Malaysia was unfavorable for the purebreds (Panandam & Raymond, 2005). When the Sahiwal and Friesian crossbred calves and heifers and purebred Friesian cattle were imported, a crossbreeding program was started to develop Sahiwal-Friesian crossbred cattle that is adaptable to the hot and humid local environment. The desired improvement was achieved with support from national development policies and organized effort among agencies and

institutes involved in research and development. Unfortunately this effort is short-lived as to date, Malaysia does not have new registered local pure-bred dairy cattle with the desired characteristics, i.e., high milk yield and adaptable to local humid conditions. One possible reason is due to the lack of focus on developing the dairy sector, breeding of purebreds has not been priority. To-date, Malaysia has no new local varieties of dairy cattle, hence importation of dairy cattle continues.

3. *Poor dairy farm management and inadequate nutritious feed* - Production remains low as management practices and record-keeping systems are still not up to standard. Small-scale dairy farmers, who own less than 30 dairy animals typically still use hand written recording system, while others fail to produce any records (Jeyabalan, 2010). Lactating dairy cattle not fed with adequate nutritious feed is another contributing factor that has led to low productivity of dairy cattle. According to Devandra and Wanapat (1986), lactating ruminants require adequate feed supplies and supplements and there must be variation in feed quality. Understanding the use of concentrates, dietary composition, stage of lactation and use of feeding standards along with a varied feed routine will assist dairy cattle in increasing milk production.
4. *High input and feed costs* - Another hindrance to the development of the Malaysian dairy sector is the high production costs. Malaysia does not have comparative advantage in milk production. As estimated by DVS, production costs per litre of milk was US\$0.35 in 1980, whereas cost of milk powder per litre equivalent was only US\$0.19 (Dijkman, 1992). Malaysia imports most of its breeder animals from Australia and New Zealand. The increasing demand from other importing countries and limited supply of quality breeder animals has resulted in higher import costs for Malaysia. The limited availability of land and grazing areas for cattle rearing as well as high feed costs continues to constrain the development of milk production in the country. An innovation study on livestock by Suntharalingam et al. (2015b) reported that one reason attributable to high feed cost is because inventions related to feed related technologies filed in Malaysia are largely dominated by foreign firms (European and American). Another reason contributing to high feed cost is that most feed ingredients are imported and subjected to global commodity price fluctuations (Suntharalingam et al., 2015c).

RECOMMENDATIONS

The Malaysian dairy sector needs to strive to improve its efficiency in production and at the same time manage its costs of production. Moran and Brouwer (2014) suggest that investing in increasing quantities of forages, better quality of supplements and/or more cost-effective feeds could tackle the inefficiency problem. However, based on past studies and observation on the field, the authors of this paper strongly believe that training farmers on adopting a proper feed formulation regime should be priority as to establish a baseline indicator on the issues concerning feed. With a baseline indicator, programs can be customized to handle feed management. The nutritional needs lactating cattle must be adhered so as to help them produce more milk, sustainably. Ultimately, the dairy sector must not only focus on production capacity but also on developing a consumer-focused value chain (Boniface et al., 2010) that would cater

to protecting animal welfare and reducing cost of production for farmers. The welfare of farmers must also be taken care in order for the dairy sector to achieve higher SSL in the future.

Investments in technology and productive assets should be emphasized in order to make advances in genetics, nutrition, and herd management. Efforts should be made in establishing traceability systems to assist farmers maintain good farm and cattle records, and also to ensure that small dairy farmers manage their farms sustainably. To overcome the limited number of skilled labors, research and development institutes, i.e., Malaysian Agricultural Research and Development Institute can offer training and provide certificate courses so as to accredit labor skills. Sustainable dairy farming coupled with good husbandry practices can protect and improve the natural conditions of dairy farming. Also, it would be in the best interest of the government to focus on intensifying research in genetic enhancement, improving breeding techniques, ensuring sufficient supply of quality animal feed at a reasonable price, strengthening dairy facilities, and offering immediate assistance to dairy cattle in times of distress. Support from the government would help strengthen the dairy sector and propel local dairy production towards meeting the rising demand for dairy products.

CONCLUSION

In this review, three main strategies were adopted by the government, i.e., production, trade and integration to tackle the low local milk production while demand of dairy products in Malaysia continues to rise. Several policies and programs pertaining to the dairy sector were formulated and adopted to revitalize and develop the Malaysian dairy sector over the past 40 years. However, as government shifted focus towards industrialization from the 1980s to the early 2000s, agriculture industry took a back seat and many dairy developmental projects were abandoned with either lack of proper implementation or clear reporting demonstrating success or failures of these projects. Hence, it is difficult to accurately assess what were the outcomes of such initiatives. Additionally, with the lack of government support, imported milk continues to flood the Malaysian market, posing a disadvantage to local dairy farmers, who are unable to market fresh milk at a competitive price. Nevertheless, the government's recent integration strategy has shown some signs of progress and should be continuously monitored so as to further improve development efforts and assist farmers to lower their production cost so as to match the price of imported milk.

As demand for dairy products continue to rise, it is imperative for dairy farmers to be equipped with the necessary skills and tools to adapt to the changing needs of today's consumers. To be able to cater to consumer demand, communication linkages between researchers and extension workers with farmers and farm organizations need to be strengthened for effective transfer of knowledge. The use of modern technology coupled with effective training programs will enhance farmers' knowledge and skills, resulting in improved local milk production, safety and quality of milk and dairy products

During the process of writing this paper, the authors learnt that there are still significant knowledge gaps in the Malaysian dairy sector. The lack of studies that addresses marketing of fresh milk causes an inability to fully understand the dairy sector as it currently stands. Future studies incorporating the marketing perspective of local dairy production will complement existing production studies so as to provide a comprehensive picture of the Malaysian dairy sector. The findings would then be complete to provide recommendations and suggestions so as to steer the future direction of this sector.

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