

The Thai Sugar Industry: Crisis and Opportunities*

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The past few years have witnessed a downturn of the Thai cane and sugar industry. This has come as a shock to many observers as the Thai sugar industry was once dubbed one of the country's most promising industries. Thailand's export of sugar had been growing in the past two decades and by 1996 the country became the world's second largest exporter. The confidence was strengthened when the Thai Baht was floated in mid-1997 and it looked like the industry stood to gain from a weaker Baht because of its massive export. Many believed that the industry had entered an era of prosperity. From late 1997 up until early 1998 the value of the Baht depreciated by as much as 50 percent. The export price (in Baht), having been substantially below the domestic price for almost 20 years, suddenly became higher and resulted in a shortage of sugar in the domestic market. Both growers and millers felt that the regulated system once designed to protect them had become an obstacle against their attempt to raise the domestic price. They then geared toward liberalization. Many insiders also vowed that they would make Thailand number one exporter within the next few years.

However, the euphoria did not last very long. As the crisis spread to other Asian countries and some Latin American countries, especially Brazil, the world's number-one sugar exporter, the world sugar price (in US dollars) fell dramatically by two thirds within a year. Meanwhile, many Thai sugar mills that were used to obtaining all the credit they wanted and had rather high debt-equity ratios, were flooded by their huge foreign debts, especially after the rapid currency depreciation. Many failed to repay their scheduled debt obligations and could not secure credit line to pre-finance the growers. Some mills also failed to pay the growers who had already delivered cane to them. Growers in those areas then staged demonstrations and shut down the mills. Other growers also demanded that the government either raise the domestic sugar price or implement a price guarantee scheme for sugarcane. Many industry insiders who had high hopes just one year ago made an about-turn to cry out loud that the collapse of the sugarcane industry was imminent and asked the government to adjust the domestic sugarcane price as well as offer the industry other forms of support.

1. FUNDAMENTAL PROBLEMS IN AND CHANGES FACED BY THE THAI SUGARCANE INDUSTRY

Virtually every cane and sugar issue in the news has to do with sugar and cane prices. Price has almost been the only dimension that every party involved is concerned with. Since the government acts as the mediator according to the Cane and Sugar Act 1984, it always becomes the target of all sorts of demands from the parties involved. In the last few years, both pre-season and post-season cane price announcements have become a highly political issue, even though the rules have already been set forth in the law. Since the private parties involved in the price-formulating system do not include consumers or sugar-users, there are tendencies that the private parties ask for price hike, since this would only benefit them. However, it becomes increasingly clear that a price hike is no longer sustainable or viable.

First, although the two-price policy that fixed the domestic price above the world price has facilitated the growth of the Thai sugar industry to become one of the top exporters, it fails to maintain adequate domestic supply of sugar whenever the world price is higher than the domestic one. This resulted in shortages of domestic sugar in late 1997 and early 1998 as well as in the early 1980s.

Second, price hikes would engender and intensify conflict between the cane and sugar industry on one side and consumers and industries that use sugar as a raw material on the other side. This is not only because the two-price system makes the latter pay a higher price for sugar, but because it also provides each sugar mill with an incentive to expand its production capacity to secure a larger share of the lucrative domestic quota. Consequently, total mill capacity more than doubled in just two decades ([Figure 1](#)). The increased capacity created huge demand for cane and led the mills to persuade more farmers to switch from other crops to cane by providing them pre-season credit.

Not only did the capacity drive lead to the doubling of the cane area, it also led to the setting up of many new mills even in areas with inadequate water supply. This has become one major cause of even more fluctuations in the sugarcane output. More importantly, the two-price policy—in which the fixed domestic price was employed as an income-stabilizing mechanism—has gradually become less effective as the increased production and export make more and more sugar subject to the volatile export price.

Although price issues have received the most attention politically, there are other main issues and challenges that are considerably more important for the industry's future or survival. Some of these issues are very different from what the industry has faced in the past. It is therefore imperative that they are understood in their proper context and the parties concerned are prepared to deal with them.

(a) Agricultural Trade Liberalization

Since the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), agricultural trade liberalization has become a very important issue. As a major agricultural exporting country, Thailand stands to gain from agricultural liberalization, since most of the Thai agricultural products can compete in the world market with little or no subsidy. Even in the case of sugar where the two-price policy could be considered a certain kind of subsidy scheme, the rate of subsidy as such is relatively low, compared to the agricultural subsidies received by farmers in the European Union (EU), the USA and Japan. Therefore, if all export subsidies and trade barrier measures are removed, the Thai sugar industry, one of the three major exporters in the free-trade market, will certainly benefit from such a liberalization.

Although some interest groups in the sugar industry want to postpone trade liberalization in order to retain the protection as long as possible, the Thai government will not be able to keep imposing subsidies or protecting the industry indefinitely. This is because, in the long run, all the World Trade Organization (WTO) member countries must follow their commitments for freer trade. After liberalization, only the fittest will survive and benefit while non-competitive entities are likely to collapse and exit the market. To maintain their competitiveness, some major sugar exporting countries such as Australia and Brazil have reformed their sugar industry. Australia is a good example of successful reforms. It has extensively reformed its system throughout the past decade and is confident of proceeding successfully.

As for the Thai cane and sugar industry, proper reform and restructuring are needed should it want to retain a leading position in the world market. Improving production efficiency will be very essential for future competition. The industry also needs to be prepared to face the fact that domestic subsidy is going to be eliminated eventually.

(b) Competitiveness

Thailand's competitiveness in agriculture has thus far been based on cheap labor and a relatively abundant land resource, acquired through deforestation. These two factors are no longer Thailand's strength. Even though the existing resources would keep Thailand as one of the major food exporters for a long time, further large-scale expansion of arable land is no longer feasible. Moreover, the unskilled wage rate that decreased slightly in the wake of the recent economic crisis is likely to return to its normal trend in the medium and long term.

Another factor that would affect Thailand's competitiveness is the world sugar price. Like most agricultural products, real sugar price shows a declining tendency in the long run ([Figure 2](#)). Among other things, the deterioration of the real prices of agricultural products results from productivity and efficiency improvements taking place in both exporting and importing countries, and in the case of sugar, both in cane fields and in sugar mills. Therefore, if the Thai cane growers were to compete in the world market while facing higher labor and other input prices, the only way out would be to increase their farm productivity.

(c) Production Efficiency

Efficiency of production is still a major problem of the industry, although the nature of the problem faced is different for the farmers and the millers. For the farmers, the problem manifests in lower yield and lower sucrose content of the cane than in other competing countries. More important is the fluctuation in annual cane output, mainly because most cane areas are rain-fed. All these factors collectively affect income stability of the growers as well as the efficiency in utilizing mill capacity.

There are also problems that arise from improper cane harvesting and transportation, for example, cane burning and long queues and waiting periods during cane delivery. In addition, an improper collection as well as trading routines

employed by cane traders sometimes causes further deterioration in sugarcane quality.

Several other problems also hamper production efficiency. These include, the lack of good cane varieties, cane diseases and meager research and development. However, some problems are structural and not easy to solve. For example, low sugarcane yield is due to the fact that a large part of the sugarcane area is located in the Northeastern region where water is scarce. Certain other problems such as cane burning, are probably caused by an improperly designed incentive system. With only a small premium for fresh-cut cane, most farmers and cutters find it more profitable to burn cane before harvesting rather cutting it fresh, even though cane burning presumably deteriorates the quality of sugarcane.

As for sugar mills, production efficiency should not be a serious problem since most mills are relatively new compared to those in competing countries. The problem is the extensive capacity expansion that has brought factories to excessive capacity and indebtedness. This is particularly the case of new mills that were equipped with state-of-the-art technology. However, after internalizing the interest cost, the average cost of producing sugar from these new mills is substantially higher than that from older and obsolete ones.

(d) Indebtedness

Until recently, sugar mills had easy access to credit. For that very reason, sugar mills also acted as intermediaries by obtaining loans from commercial banks to provide pre-season credit to growers. Capital account deregulation in the early 1990s made it even easier to acquire cheap credit from abroad, thus fueling rapid mill expansion. Some of these loans were also used to invest in other businesses, including real estate. When the crisis hit in 1997 and the Baht lost its value by one-half in early 1998, the amount of foreign debts doubled and many mills failed to repay their debts on schedule. The commercial banks then stopped providing loans to the mills, which, in turn, were unable to provide the growers with pre-season credit. The government then asked the Bank for Agriculture and Agricultural Cooperatives (BAAC) to provide pre-season credit to the growers for the 1998/99 season. The BAAC later agreed to the government's subsequent requests to provide pre-season credit for the 1999/2000 and 2000/01 seasons.

Besides having the BAAC provide the farmers with pre-season credit, the Cane and Sugar Fund borrowed an additional amount of 10,300 million Baht from the BAAC to pay growers extra 100 Baht per ton cane for the 1998/99 and 1999/2000 crop years to fulfill the government's promise. The Fund will have to repay the BAAC in five years. At present, it uses the extra revenue from recent sugar price hike to repay this debt. However, this revenue alone will not be sufficient to service the outstanding debts and the Fund will have to obtain more money, possibly from the revenue-sharing system.

2. PRODUCTION EFFICIENCY OF THE THAI SUGAR INDUSTRY

Among the problems mentioned above, production efficiency is likely to be the most crucial issue determining the success and survival of the industry. The major findings of this study on production efficiency can be summarized as follows.

(1) Low sugarcane yield and high variation in output have been the major concerns of the Thai sugar industry. The main reason is that most of the mills are located in rain-fed areas. Moreover, the percentage of rain-fed cane area has increased substantially in the past decade, partly because most mill expansions were done through relocation to the Northeastern region. Sugarcane diseases are also a crucial factor contributing to yield fluctuations. Other factors found to affect yield include sugarcane price, R&D, share of irrigated cane area, amount of labor and machinery used in the planting area, and not least, farmers' own experience.

(2) Water is one of the most important factors that affect cane yield and output variation. At present, most of the sugarcane area is located in rain-fed area while only 10 percent is in irrigated zones. Moreover, some irrigated areas do not receive adequate water supply year-round. Most growers realized the importance of water and were paying to drill their own artesian wells in the areas where ground water tables are not very deep. However, most farmers in irrigated areas often use the water wastefully by using the "furrow" system, since it is the cheapest way to use the water.

Water shortages and water allocation problems lie beyond the control of the sugar industry and the agricultural sector. The government, however, could assist the industry in a number of ways in overcoming some of these problems. First, in an irrigated area without a farm-level water delivery system, the government should encourage millers and farmers to collectively build the water delivery system. The government could coordinate and provide technical assistance in

the process. Second, the BAAC should provide medium- or long-term credit for water source development such as drilling artesian wells in geographically suitable areas. Third, the government agencies should emphasize research on inexpensive water-saving technologies. The government also has a reason to subsidize application of such technology since it can make scarce water resources available to a larger number of farmers.

(3) The epidemic of cane diseases is partially due to improper culture practices. Moreover, the use of only a few sugarcane varieties constitutes a high risk of severely widespread diseases. The current practices also make wasteful use of new cane varieties. Often, when a new variety becomes popular, it is used extensively in the area. It is then subject to infection, and when that happens, the farmers will change to another variety within two to four years. This sort of behavior not only contributes to output variation, but also produces long-term adverse impacts for sugarcane farmers, as each new variety would only have a very short life.

Destroying all infected cane and then cleaning up the area or temporarily switching to another crop would solve the problem. However, to make eradication effective, coordination is needed so that all the infected areas are cleaned up simultaneously. This is difficult and may require the setting up of a fund to provide compensation to affected farmers.

(4) Although returns from research and development in agriculture—particularly in plant breeding—are consistently high, there is not much progress in sugarcane research and development in Thailand, compared to other crops. This failure encompasses two major weak points. First, the investment level is fairly low and has a declining trend. Second, though the breeding program has been administered for more than 25 years, successes are rare. About a dozen varieties have been introduced and only a few have been used extensively by the growers.

At present, there are three sugarcane-breeding programs undertaken by different government agencies, viz., the Office of Cane and Sugar Board, the Field Crops Research Institute, and the Kasetsart University. The annual research budgets for sugarcane are generally lower than those for other crops. The proportion of sugarcane research budget, compared with the value of output, has also been decreasing since 1994. Furthermore, the shortage of researchers has become more pernicious. Almost 30 percent of the current researchers will be retiring within the next five to 10 years, without new researchers to replace them.

The lack of success in the breeding programs is partly due to a lack of cultivars as well as a poor database on history of each cultivar or hybrid. Other obstacles include not having a good photo-period laboratory, limited cultivar/variety information exchange with researchers in other countries. More importantly, there is too little coordination or collaboration among researchers from different ministries.

(5) Cane loaders are used extensively in the Northern region and the Central Plains, as their costs are lower than or at least comparable to manual labor. Cane harvesters are however not very popular among the farmers, since using them in small and unlevelled-terrain plots usually costs more than paying manual workers. Indeed, most of the cane harvesters being used belong to sugar mills that rent them out at a low charge to help them procure cane.

Research and development on machinery (such as cane harvesters) is costly and time consuming, and has high rates of failure. Lack of knowledgeable engineers in this field is another problem. However, there are private companies that have an incentive to develop agricultural machinery, especially for use during periods of labor shortage—which may return in the near future when the economy improves. To promote research and development, the government may reinforce petty patents to protect inventions that constitute small modifications of old machines, and act as a coordinator in developing machinery research by supporting collaboration between research institutions and private companies.

(6) Because many Thai sugar mills have expanded their production capacity continually during the past 20 years, they tend to have the most up-to-date machinery and technology compared to sugar mills abroad. However, production efficiency of Thai sugar mills is still lower than the best managed and highly efficient mills from countries like Australia, mainly because of the problem of cane quality, exacerbated by cane burning and poor logistics. Changing the trade rules (e.g., employing a full CCS system and/or increasing the fresh cane premium) would help improve cane quality.

The race to expand sugar mill capacity has been a constant problem in the past two decades. Even though expansion helps to reduce the average cost of sugar production through economies of scale, the total economic loss may be greater than the benefit each factory might have gained. The economic loss can be of two types. The first type of loss is caused by over-capacity of production and investment. The rate of capacity utilization is currently at 65-89 percent of the installed capacity industry-wide. The second type of loss emerges from the need of the expanded mills to procure

more cane. In this process, the mills usually provide a large sum of credit to lure farmers to switch from other crops to sugarcane. This inevitably causes an expansion of sugarcane into unsuitable area and has resulted in the problem of bad debt for several mills.

Although the race to expand is a classic case of rent dissipation, attempts to curb it have failed most of the time. This is partly because of the incentive system under the two-price policy, which allocates the domestic quota based on the actual production of each mill. The problem is now somewhat mitigated because of the mills' debt problem and low cane prices in recent years. However, the system remains in place. In the unlikely event that the domestic sugar price is increased substantially, the expansion race can well return and begin the vicious cycle all over again.

(7) The debt problem has made it impossible for sugar mills to act as loan intermediaries as they used to do in the past. As a consequence, growers who were used to obtaining pre-season credit through the mills had their credit cut off. The government then asked the BAAC to provide pre-season credit instead. However, in the past two seasons, the amounts lent by the BAAC have been much lower than expected. This is partly because the BAAC now provides the credit in a more careful fashion after a prudent examination of the farmers' collateral—which is required for loans larger than one million Baht. The second reason is that the interest rates the BAAC charges cane growers are comparable to the rates it normally charges its regular customers, but higher than the special rates cane growers used to get from the mills in the past.

3. THE REVENUE-SHARING SYSTEM

The revenue-sharing system has been in place since 1982, shortly before the enactment of the 1984 Cane and Sugar Act. The law empowers the government to act as both the regulator and mediator who sets up rules for negotiation between cane growers and sugar mills. The government has been also responsible for maintaining a high domestic price of refined sugar—at 13 Baht/kg—for almost 15 years, which was substantially higher than the export prices, except for a brief period in late 1997 and early 1998.¹ The fixed domestic price, therefore, not only raised growers' and millers' income, but also worked as income stabilizer. For almost 15 years, the revenue-sharing system has been very successful in solving conflicts between growers and millers and has contributed to the industry's success and expansion in the 1990s.

Although the system has been beneficial for both growers and millers, neither side is satisfied with it. At times, negotiations between growers and millers or within each group were very intense and all sorts of tactics were dug up to use against each other, including walkouts during negotiations, resigning en masse, or even shutting down the mills. Occasionally all parties involved, including some government representatives in the Cane and Sugar Board, would come out with a claim that the industry was treated unfairly under the existing system and demand price hikes, both when the export prices were unusually high and when they were unusually low.

Fundamentally, there are two related problems that make the existing revenue system ineffective at times. First, the system always loses its effectiveness when the export price is higher than the domestic wholesale price, as sugar disappears from the domestic market. Second, as the Thai sugar industry grows, the share of production that needs to be exported grows along with it, making the system's revenue fluctuate more widely and decreasing the average sugar cane price. This is because under the revenue-sharing system, cane price is derived from a weighted-average of the domestic sugar price and the export price, which is lower than the domestic one.

There is also a conflict of interest within the revenue-sharing system. Typically, cane growers' most important objective is to get the highest cane price. Under the existing revenue-sharing system, this is achieved by limiting the supply of cane, since producing an extra ton of cane will result in more sugar that will be exported at a lower price. The millers, on the other hand, would like to make use of their already-invested mill capacity as much as they can, and therefore call for more cane production.

Besides, the present system has some practical problems, including the following.

- Sugar mills compete for their share of domestic quota—which is allocated based on actual production. As a result, they have an incentive to expand milling capacity. Also, they have been competing to procure cane and many pay higher price to secure more cane. Often, such competition results in unnecessary cane transportation back and forth from one area to another (where the grower gets a better price), an activity that simply causes rent dissipation.
- Since the domestic sugar price is normally higher than the export price, there is an incentive to sell sugar

supposedly destined for export illegally in the domestic market, especially during the period of very low export prices. The opposite was also true when export prices were substantially higher than the domestic price.

- Several exporting industries that use sugar as a raw material have to pay higher price for sugar than their competitors abroad and thus lose their competitive edge because of this government-sponsored system.

There are also technical problems in the revenue-sharing system:

- Some grower associations call for output-sharing system to replace the revenue-sharing system. This demand became more pronounced after many sugar mills were unable to provide them with pre-season credit.
- There has been conflict on which products and/or by-products should be included in revenue sharing. While millers propose that revenue sharing should end with raw sugar and molasses, some farmers want to extend the revenue-sharing system to other by-products including particle boards.
- There have been arguments on whether actual figures or figures that were previously-agreed upon when the system was set up ought to be used in calculating revenues and costs of the industry. Among these are the cost of cane production, price of molasses, cost of refining, and transportation cost.
- After Thailand changed the foreign exchange regime from fixed exchange rates to a managed float, the exchange rate became an important variable in the calculation of the system's revenue. At present, the method employed makes it look like a bet rather than a risk-sharing system.
- The problem of applying zoning in the revenue-sharing system.
- The problem of establishing a cane buying system based on quality (e.g., based on a full CCS, providing premium for fresh and clean cane, etc.)

Despite these problems and shortcomings, in the short-run, the current system is the most promising one compared with other alternatives. Essentially, the current system helps the growers and millers by increasing both price and income stability, both of which are important in an industry where prices are highly volatile. All the parties involved are also well acquainted with the system. The study therefore recommends that the sugar industry attempt to modify the current system rather than abandoning it for a new one. The modifications needed are recommended in Section 5, below.

4. MARKET EXPANSION AND INTERNATIONAL TRADE NEGOTIATION

Since two-thirds of the sugar produced is exported, there are always suggestions that the Thai sugar industry would be better off if it could rely more on domestic use of sugar and on increasing value-added at home rather than exporting raw or refined sugar. Two frequently-asked questions by those who are interested in the industry are: whether there are opportunities to increase domestic use of sugar substantially, and whether there are opportunities to increase Thailand's export market or export price substantially.

(1) For the domestic market, there are two types of principal users: consumers and industrial users. Up until the crisis, total domestic consumption of sugar increased gradually every year, approximately at the same rate as the GDP growth. Domestic demand for sugar increases slightly with income.² As for industrial demand, it consists of two parts: domestic indirect consumption and export demand of food and confectionery industries.

Since domestic demand for sugar consumption is inelastic and is unlikely to increase in the wake of the crisis, increasing domestic use would have to be done through the export industry. At present, the export industry uses only about 2 percent of the total production. There has also been conflict between the export industry and the sugar industry regarding the sugar price. Since the enactment of the 1984 Cane and Sugar Act that became an instrument that lifted the domestic price above the world price, the government has persuaded the sugar industry to provide rebate to the export industry. Up until 1997, the effective price of refined sugar that the export industry paid was between 8 and 10 Baht per kilogram, which was between the export price and the domestic wholesale price. Since early 1998, the sugar industry stopped providing the rebate. The justification was that the export price then was already higher than the domestic wholesale price. Shortly after that, the world price of sugar fell substantially. However, the sugar industry still refuses to provide the rebate on the grounds that the sugar industry itself is in trouble financially and is therefore not in the position to "help out" any other industries.

Although providing a rebate would hurt the sugar industry's revenue in the short run, there are at least two reasons against the sugar industry's decision to abandon the rebate scheme. First, since the export industry has to buy sugar at a high price because of the government's act, the government has an obligation to correct such a distortion that affects another industry adversely. Therefore, the sugar industry should not be the one that makes the sole decision on this matter. Second, the discounted prices at which sugar is sold to the export industry were generally higher than the export prices. Thus, if giving out rebate results in more sugar being used domestically, then the sugar industry would also be a benefactor from such a policy in the long run.

(2) Another alternative being proposed to increase value-addition is promoting product differentiation, such as selling new types of sugar or with new packaging. Although such specialties are sold in supermarkets at premium prices, they have low growth potential. Even though brown sugar has gained more popularity recently among health conscious consumers, its current market size remains at about 1 percent of the total domestic consumption. Other specialties have even less market share. Only one sugar group has been active in the specialty market, possibly to enhance its image rather than because of profit motive.

(3) Thai sugar exporters do not have problems selling their entire products at the world prices. Therefore, the industry does not need government assistance in locating new markets or the government-to-government or barter trade to help sell Thai sugar. The more relevant issues that need to be addressed by the Thai government are trade barriers and export subsidies in developed countries. Not only do both these measures affect the world price adversely, they probably also contribute to price fluctuation. This is because the high levels of protection and subsidy have made the world sugar market a thin, and therefore volatile, market. Furthermore, the sugar market with its two major importers—the USA and the EU—are preferential markets that allocate import quotas based on political and historical reasons. Therefore, there is room for the Thai government and the Cairns Group to negotiate for an abolishment of such preferential treatment or to reduce out-of-quota import tariffs, in the coming round of the WTO negotiations.

5. POLICY RECOMMENDATIONS

This study provides recommendations in four areas, namely, (a) production efficiency, (b) pricing policies and the revenue-sharing system, (c) marketing and trade negotiation, and (d) organizational reform. The first three areas are highlighted in this section and the last area will be treated in greater details in Section 6 below.

Production Efficiency

- Define roles of each party on research, development and extension, based on their respective comparative advantages. For example,
 - Research on cane breeding/varieties improvements: the government
 - Research and development on farm mechanization: the private sector (with technical support from the academics and relevant government agencies)
 - Research and development on sugar production: sugar mills
 - Disease prevention and control: the government and growers
 - Cultural practices and field extension: growers, millers, and the government (especially on the research side).
- Set new directions for research, development and extension and a researcher development plan.
- Establish sugarcane cultivars/variety collection centers and an information bank.
- Develop a permanent funding system for research and development programs by setting up a Sugarcane and Sugar Industry Development Fund. The Cane and Sugar Board should allocate 1 to 2 percent of the revenue from the revenue-sharing system and the government should contribute a matching amount to the Fund. The Fund's management must be autonomous and free from political interference from the Cane and Sugar Board. (See Section 6 below for more details).
- Set up aggressive policy and action plan on disease prevention and control.

- Improve the information system and construct an efficient evaluation system for the Office of the Cane and Sugar Board.

Pricing Policies and Revenue-sharing System

- The current system has an advantage over immediate unilateral liberalization, especially in the short run. However, liberalization is necessary and unavoidable in the long run. Therefore, all involving parties must prepare themselves for eventual liberalization by improving their efficiencies. Plans should be designed accordingly, and the necessary steps taken to make the transition least painful for every party. (An example is provided in the main report of the study).
- The Cane and Sugar Board should be reorganized in such a way that it would include substantial representation from consumer groups, sugar-using industries, and academics. This would ensure that the Board's decisions—especially on sugar and cane prices—would take into account interests and concerns of parties outside the industry. It will also enhance the credibility of the Board's resolutions when they are proposed to the cabinet for approval.
- The policy on capacity restriction of sugar mills must be formed and enforced seriously. A sugar mill that moves to another area should not be allowed to increase its capacity, unless it is merged with another mill. Such a merger must be done in such a way that the total capacity does not increase.
- Set up a sugarcane pricing system that is based on cane quality. Cane price should be based on sucrose content (or fully on CCS rather than employing an arbitrary rule as is the case now in which cane price is based 60 percent on CCS and 40 percent on cane weight). The system should also provide an economically reasonable premium for fresh and clean cane based on its marginal productivity.
- With rare exceptions, the revenue-sharing rules are zero-summed in nature. It is therefore likely that while one party may benefit from a proposed change, other parties could be hurt by it. Rule-changes that affect only the sugar industry should be put on the negotiating table and all involving parties be encouraged to work them out by themselves. The government should act mainly as the mediator and regulator. However, the government needs to strengthen its knowledge on the issues and step in to end any the stalemate that would affect the industry adversely.
- Although the government, particularly through the Office of Cane and Sugar Board, is to facilitate development of the sugar industry, its main roles should be mediation, regulation, and technical assistance. Its promoting role should focus on facilitation and coordination rather than becoming a speaker or lobbyist for the vested interest of the sugar industry.

Marketing and Trade Negotiation

- As long as the net export prices of refined and white sugars are higher than the net domestic wholesale prices, rebate to food and confectionery exporting industries should be provided on fairness grounds, since the higher domestic sugar price is in fact a consequence of the government's enactment of the sugar law of 1984. A workable solution that would be beneficial to both parties in the long run would be to devise a forward contract in which the prices are fixed annually.
- Thailand should rely on multilateral trade negotiation to deal with agricultural trade protection in general, and as it applies to sugar, in particular. The Thai government should maintain its alliance with the Cairns Group and with other major food exporting countries in the Asia-Pacific Economic Cooperation (APEC).
- Thailand's main objectives in the WTO's coming round of negotiations should be focused on abolishing export subsidies and on reduction of out-of-quota import tariff rates for all agricultural products. Thailand and the Cairns Group should also propose that countries with high out-of-quota tariff rates be required to reduce their tariffs to a greater proportion than the countries with low tariff rates. A process needs to be developed that would bring the Ministry of Agriculture and Cooperatives, the Ministry of Industry, the Ministry of Commerce, and the private sector, together to form the national agenda for trade negotiations that would help formulate Thailand's stand on tariff reduction.
- Since multilateral trade negotiations would focus not only on agricultural trade but also on all goods and

services, Thailand needs to be prepared to yield some reciprocal benefits to the major trade partners (e.g., the USA and the EU in case of sugar). One possible item that Thailand could offer in exchange is willingness to liberalize the government procurement system, an action that would also bring about more transparency in the process and would therefore be beneficial for Thailand, as well.

6. ORGANIZATIONAL REFORM

The present organizational structure of the sugar industry is an outcome of the establishment of the revenue-sharing system and the enactment of the 1984 Cane and Sugar Act. During the last two decades, the system has been successful in mitigating serious conflicts (which used to be violent in the past) between growers and sugar mills by bringing them to the negotiating table. The present system has established rules and regulations for a systematic and official negotiation process, with the government acting as a mediator and regulator. However, while the current organizational structure can facilitate negotiation effectively, it has not created an environment that would support research, development, or productivity improvement—elements crucial to the preservation of Thailand's competitiveness in the future.

Another problem with the current structure of the Cane and Sugar Board is that it includes only two vested interest groups—growers and millers—in negotiations, with the government acting as the mediator. Consumers and other interest groups outside the industry are not included and have to rely only on the cabinet to act on their behalf.

The proposal on organizational reform addresses these two problems. The recommended reforms remain compatible with the present revenue-sharing system. Two major changes proposed are: (a) establish an independent organization that is responsible for research and development, namely the Cane and Sugar Development Board and (b) restructure the Cane and Sugar Board so that representatives of consumer and other relevant groups are included in the board.

The proposal includes:

- Set up the Cane and Sugar Development Board and the Cane and Sugar Development Fund, which will be used solely for research, development, and training. The 1984 Cane and Sugar Act should be amended to support the foundation of the new institutions, define their functions, and sources of funding, etc.
- The Cane and Sugar Development Board, which would act as the governing body of the Cane and Sugar Development Fund should consist of 11 members. Three members are to be appointed by the Cane and Sugar Board. Other eight members are to be selected through a nomination and selection process. Growers and millers may nominate a list of people to the selection committee that will select two representatives for each group from the list. The government would provide another list of qualified nominees, from which the selection committee will appoint the remaining four representatives, including at least one representing the Ministry of Agriculture and Cooperatives.
- The Cane and Sugar Board should be restructured so that representatives from consumer and other groups concerned (such as the food and confectionery industry and cane and sugar experts) are included on the board. The combination should be such that there is an equal number of representatives from these four groups, viz., growers, millers, the government, and others.
- Any resolution of the Cane and Sugar Board on domestic sugar price or formulae/methods used in determining the price must gain approval votes from at least three-fourth of the committee members.
- Any resolution of the Cane and Sugar Board would be valid only if at least one-third of the government representatives vote for or against it.
- The 1984 Cane and Sugar Act must be amended accordingly to support the proposed changes in the organizational structure.

In the long run, the organization should be modified to support liberalization. When the industry is fully liberalized, various organizations under the Cane and Sugar Board can be dismantled. The only organization that will still be important is the Cane and Sugar Development Board/Fund.

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