Contrary to the policies of the major producing countries (Brazil, China, India, Russia, Thailand, United States)

A European sugar policy that needs rebuilding

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Table of contents

Summary

While the European sugar sector is going through a crisis following the abolition of its regulatory tools, **this study brings together the main elements of economic analysis to initiate a strategic reflection aimed at rebuilding a new European sugar policy.**

Third largest producer in the world, the European Union developed its sugar production thanks to a system of quotas and minimum prices established in 1968. Spared by the reform of the CAP of 1992, the European sugar policy underwent an important modification in 2006 to responde to the attacks from Brazil, which had seized the WTO for non-compliance with export subsidy reduction commitments.

The 2006 reform was a complete change of logic for the European sugar sector. Previously, exports were the adjustment variable to stabilize the domestic market and the volume of imports was under control. **From that date, exports are capped and sugar production becomes adjustable to take into account less controlled import flows, all in a context where the development of biofuels offers a new outlet.**

The 2006 reform quickly achieved its main objective: **to satisfy Brazil, the world's largest producer, by halting the export through dumping in order to boost international prices.** For the European sugar sector, **this strategic drop in European production has allowed production to concentrate in the most productive areas while retaining the protections to cope with the volatility of international prices.**

In 2013, the decision to abolish sugar quotas was not subject to international pressure, but was taken in a context of collective euphoria due to high prices partly resulting from the decline in European production. The belief, unfortunately unfounded, in the ability of private crisis management tools - insurance and mutual funds - to compensate for greater exposure to the price level of international trade will also have played an important role in this decision.

The fall in European prices will not only have losers: **the actors of the agri-food sector- Coca-Cola in mind - can now have access to a raw material essential to their business for a price lower than its cost of production, one more after cereals, dairy products, etc.**

The deregulation of the European sugar market is all the more questionable since **the examination of sugar policies in the other six main producing countries shows that sugar benefits from highly interventionist measures.** There are still quotas in the United States and Thailand. China, India and Russia are protecting their domestic market with significant tariffs. In all countries, and particularly in Brazil, support for biofuels is also an important regulatory variable and is increasingly used.

In the end, **it appears that we cannot speak of "world sugar prices" since the European Union is the only major producer country to be directly connected with the export price of Brazil**. The theory of international trade teaches that the market returns by itself to the equilibrium price that equals the production costs of the least competitive producers but necessary to satisfy all the demand. This is not the case, and **as for other productions, it is the surpluses of the most competitive country that magnetize the international price most often at its level of dumping.**

The analysis of the volatility of international sugar prices shows that the flexibilisation and coordination of different biofuel policies is a major subject. Everything happens as if with a stock level corresponding to 127 days, nearly 4 months, the market consideres that we were close to a shortage and, conversely, with the equivalent of 6 months of consumption, the market becomes depressed and prices at teir lowest.

The difference between these extremes is only 2 months of consumption, about 32 million tons. **Therefore if we take the pivot value of 5 months of consumption as an adequate stock level, it appears that with a stabilizer flywheel of 16 million tons**, we would be able to rebalance the fundamentals of the international market. **This stabilizer flywheel converted to ethanol represents only 0.34% of annual oil consumption.**

As it stands, the future of the European sugar industry is highly uncertain. If, in the short term, the decline in production will reduce exposure to international trade and hope for a rise in prices, **a new Community policy remains to be rebuilt. The European Union cannot turn its back on its responsibilities for the security of its sugar supply, the stabilization of international trade and the development of renewable energies to prepare the post-oil era.**

In conclusion, it is urgent that the European Union seize a twofold priority: rebuilding the European sugar policy while participating in the stabilization of international trade where it occupies a decisive position.

Introduction

The end of the quota system pushed the European sugar sector into crisis. By releasing the European production potential, it has led to the European market being connected to international prices which are currently at their lowest. While Brazil, the world's largest exporter, holds a major leadership role, the end of European quotas in 2017 as well as the important reform of 2006 show that European decisions are not without effect on international (im-)balances.

This study traces the main stages of the European sugar policy since the 1968 regulation which established the European quota system. It also provides an overview of sugar policies in the main producing countries (Brazil, India, Thailand, China, USA, Russia) which shows in particular that the European Union (EU) and Brazil are the only two major producers directly connected to international exchanges. Finally, based on an analysis of the fundamentals of production, consumption and trade on a global scale, we seek to lay the foundations for a new European sugar policy that seeks to meet the regulatory needs of the European sector while becoming a stabilizing factor at the international level.

1. The European sugar sector, a development in the protective framework of quotas since 1968

In 2018, the European Union was the world's third-largest sugar producer, producing 19.5 million tonnes, or about 10.2% of world production. Sugar is mainly derived from sugar beet, and comes largely from northern Europe (Figure 1). France in particular stands out with almost 33% of European production in 2018, followed by Germany (22%) and Poland (12%)[1]. The sector is concentrated with seven companies, mostly cooperatives, which produce almost 85% of European sugar[2]. And in total, 15 groups process 98% of EU sugar in 106 industrial sites.

[1] Données Eurostat
[2] Rapport CGB 2018. http://www.cgb-france.fr/wp-content/uploads/2019/01/ra2018-livre-bd-v2-1.pdf

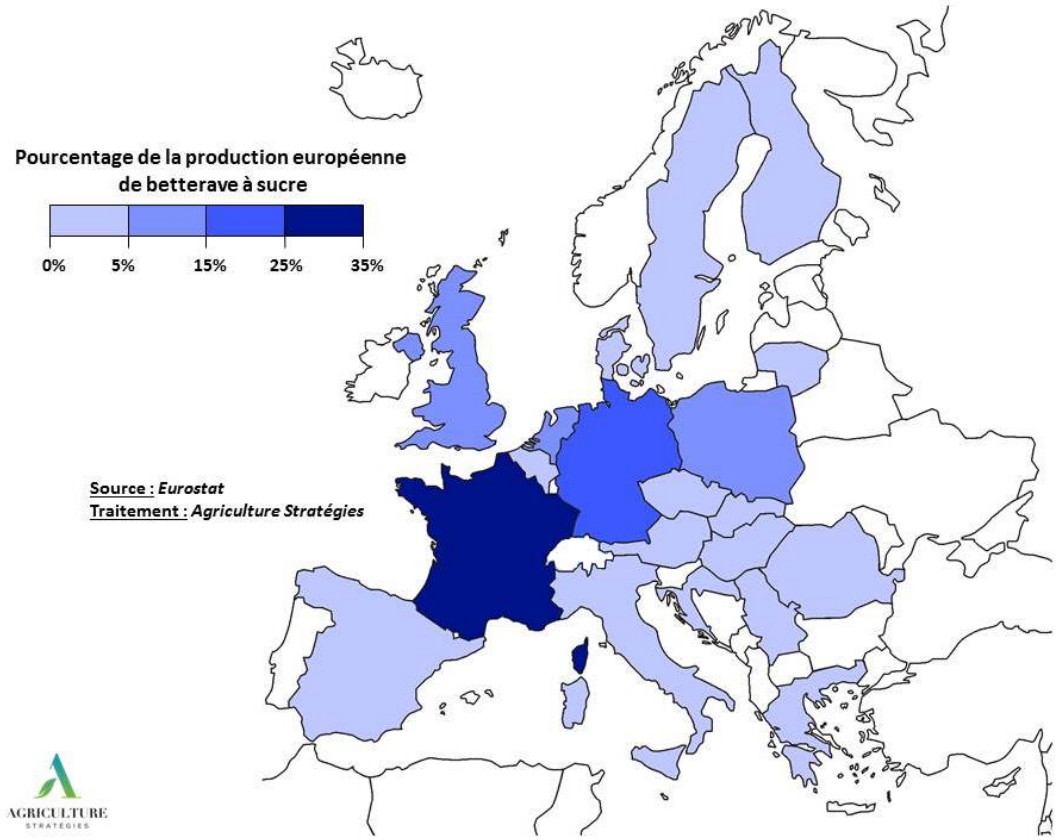

Figure 1 : Main sugar beet producing countries in Europe

From 1968, one of the most interventionist common market organizations

The sugar industry was the first to experience a production quota in Europe, well ahead of the milk quotas of the early 1980s. Sugar and quota beet benefited from high minimum prices. Quota volumes were defined to cover European needs while providing a margin of safety. If there were no climatic incidents affecting yields, part of the surplus stocks benefited from export subsidies which were partly financed by the planters and the industrialists themselves through a contribution levied on part of the quota.

Moreover, quotas did not constitute a ceiling for production, it was possible to produce more, but the excess part of production had to be exported: it did not benefit from higher Community prices but was valued at the level of international prices. We generally speak of "double quota" to qualify this type of regime where the volume under quota is better valued but that production out of quota remains possible.

The common organization of the sugar market has led to a substantial increase in production on the European continent (Figure 2). Beet growing guaranteed a stable and higher turnover than other crops. In addition, technological advances in production and processing have led to a significant improvement in productivity.

The sugar factories thus underwent a very important phase of modernization and concentration during the period. They were also the object of a major integration movement: they were gradually bought back by the producers themselves who set up cooperatives. In France, for example, if producer cooperatives held only 15% of processing capacity in the 1980s, this share now exceeds 95% (including a German cooperative).

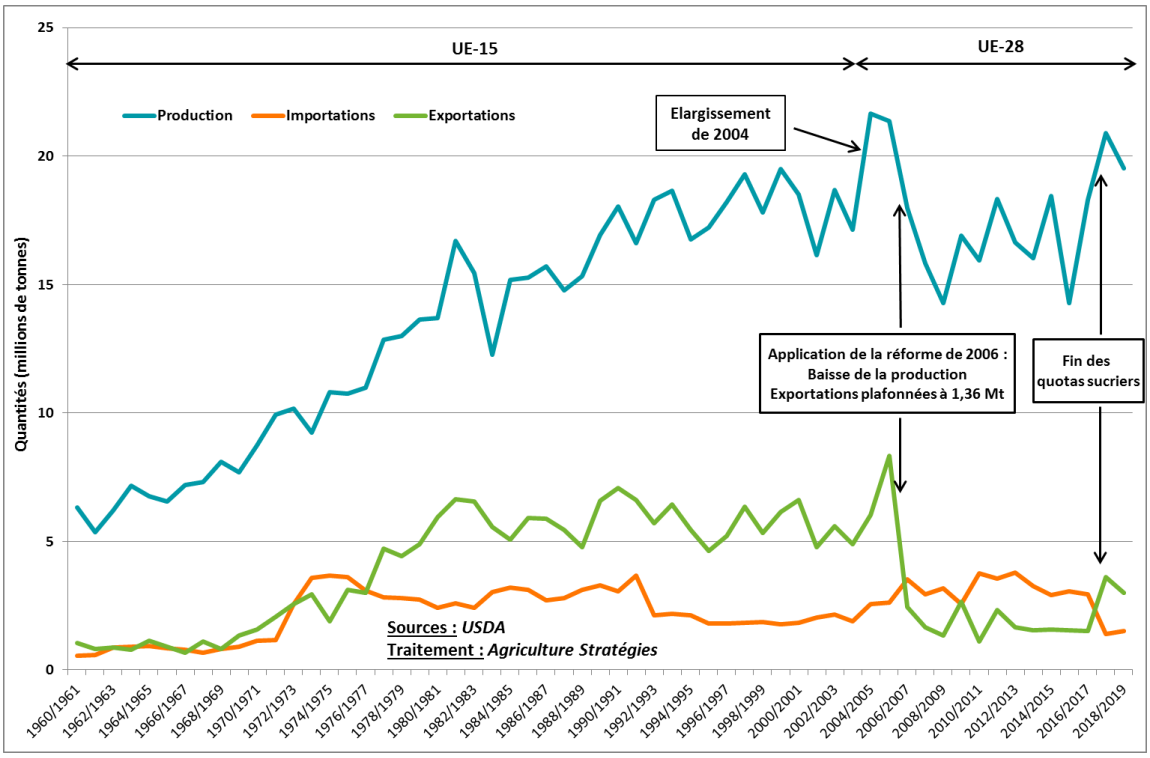

Figure 2 : Production, importation and exportation of sugar in Europe

Focused on the European market, the quota system did not close off the European Union. Exports stabilized at the beginning of the 1980s at around 5 Mt. On the import side, variable levies at European customs allowed the minimum price to be maintained. But they had to be replaced by fixed duties from 1995/96 in application of the Marrakesh agreements. While there was talk of reducing them in the context of the Doha Round negotiations, customs duties on entry into Europe still remain high today: 419 €/t for white sugar and 323 €/t for brown sugar (unrefined).

Import flows on European territory therefore result from preferential trade agreements for which rights are low or zero. Following enlargements of the EU and agreements with 15 ACP countries (Africa, Caribbean and Pacific), in the framework of the Lomé Convention signed in 1975, various countries were able to benefit from access to the European market that was very attractive as the community prices were high.

This trade preference regime underwent a major shift in the early 2000s. While a share of imports (around 1.1 Mt) continued to be governed by low or zero duty quotas, this is not the case either for flows from least developed countries (LDCs) since the Everything But Arms (EBA) initiative in 2001, or for ACP countries with the implementation of the Economic Partnership Agreements (EPAs) following the Cotonou agreement: these countries have unlimited access to the European market. More specifically, access granted to LDCs was part of a transitional period running until 2009. The prospect of seeing imports entering the EU with no control, combined with Brazil's attack on the quota system with the WTO, led to the 2006 reform.

2. The 2006 reform, a major reform for the European sugar sector

The European sugar industry remained relatively unchanged from the 1992 CAP reform movement, which led to lower guaranteed prices for cereals and beef and the introduction of direct aids per hectare and per head of cattle. But with the end of the "peace clause" signed in Marrakesh, Brazil struck the charge against the European sugar policy by seizing the WTO in 2003. The world's largest sugar exporter accused the EU of not counting re-exports of ACP sugar in its export subsidy limitation commitments. In addition, it challenged the double quota system as a form of export subsidy for over-quota production.

This standoff has led the European Union to meet its commitments made at the time of the creation of the WTO: subsidized exports should not exceed 1.35 Mt even though the volumes actually marketed were more than 5 Mt and that unlimited access to the Community market had been given to LDCs.

The 2006 reform represents a complete change of logic in the regulation of the European sugar sector. Under the 1968 regime, exports were the adjustment variable to stabilize the domestic market and the volume of imports was under control. The aim of the reform will be to cap exports and adjust European production, taking into account almost unimpeded import flows.

To adjust the internal market quotas are maintained but reduced by more than 6Mt in 3 years. The restructuring is done on a voluntary and incentive basis: it is proposed to buy back the quotas and compensate the plant shutdowns. The restructuring fund is directly fueled by a tax on sugar. The aim is also to concentrate production in the most productive areas, but countries that have chosen to abandon more than 50% of their production will be able to benefit from aid coupled with hectare of beet to maintain a few processing plants.

To limit the risk of import flows from LDCs and ACP countries, the European minimum sugar price is lowered by 36% to 404.4 €/t. In compensation, producers receive aid covering 60% of the price drop. This aid is decoupled - it is also paid to producers who have stopped beet production - and is directly integrated into the single payment entitlements (SFPs) which were then being introduced. Beet growers will have stronger SFPs, but the gap will narrow as the SFP's face value converges as a result of subsequent reforms.

A fine mechanism of management of the internal market …

The quota level was set according to European food needs. Out-of-quota production was allowed, but the sugar factories had to prove that they had sufficient outlets. Non-quota production covered sugar exports but also alcohol and ethanol production. It was during this period that the biofuel sector experienced a significant growth, encouraged by increasing incorporation mandates in fuels.

Out-of-quota production also provided significant latitude. In the event of tension on the European sugar market, a share of non-quota production could be requalified in quota production. This provision was used in particular in 2011. Conversely, the Commission had the option of adjusting the quota volume downwards in order to maintain the market equilibrium, including in the case of excessively large imports.

The 2006 reform had the desired effects: the EU became a net importer of sugar and the international price had a favorable evolution until reaching European prices in 2010 (Figure 3).

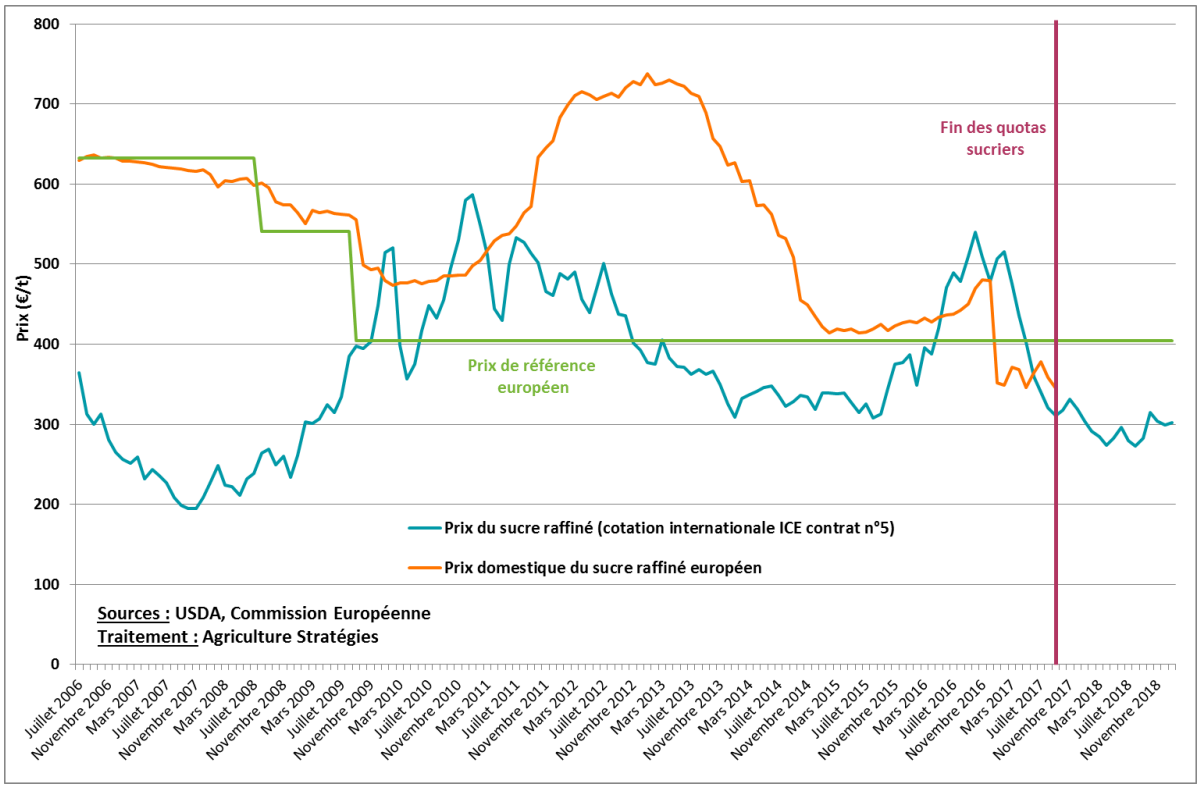

Figure 3 : Evolution of european and international prices since the 2006 reform

… that led to a slip

Paradoxically the convergence between the international price and the European price caused an escalation on the European side from 2011. With European prices close to international prices, exports were no longer constrained by WTO rules. In addition, low duty import quotas (98 €/t) were no longer fully used. Finally, third explanatory parameter, the level of European stocks was low, which is a constant, including for cereals, so much so that one can speak of a European distrust vis-à-vis storage (the ratios of inventories are consistently lower in Europe than in other major producing countries). As a result, the tensions observed on the international markets in 2010 and 2011 resulted in a rise in the Community price to over 700 €/t, well above the minimum price of 631.9 €/t in effect before the 2006 reform.

These tensions on the Community market called for emergency measures for the 2012/13 campaign: an additional import quota of 0.4 Mt was recorded as well as the export restriction of 0.65 Mt. However, what is especially important from this episode is that the fixed tariffs can cause abrupt lurches when the country becomes a net importer: the variable levies remedy this type of inconvenience.

3. Abandoning sugar quotas: produce more to earn less

Difficulties in dealing with this episode of tension passed relatively unnoticed. Involved as early as 2011, ahead of the 2013 CAP reform, the Commission prepared the spirits for a removal of hardly reformed quotas. The main argument was that sugar had to undergo the same evolution as the other productions, the abandonment of milk quotas having been decided in 2008. In addition, the era was euphoric for almost all productions, the "9 billion mouths to feed in 2050 speech" was in full swing: the food supply was not going to be able to follow a growing demand, the problem of shortages would definitely replace that of overproduction.

The end of the sugar quotas was recorded during the CAP reform of June 2013. During the negotiation, the initial deadline of 2015 was postponed by 2 years. The economic players wanted to be offensive and hoped to conquer export market shares: they would no longer be constrained by the export quota. The direct connection to international trade was not considered a problem: it was already the case for cereals where the futures markets were hedging, moreover the deregulation was to generate greater volatility and therefore more opportunities for those who would make the right coverage choices. Finally, the Commission introduced in the CAP the possibility of financing income and economic mutual funds (Income Stabilization Tool). In short, private risk management tools could replace a quota system that limited export ambitions.

But, unlike the 2006 reform that had helped to increase international prices, the end of quotas made the EU a net exporter and contributed to imbalances in a market where stocks had recovered. While Brazil has a leading role in international trade, it cannot be said that changes in European sugar policy have no impact on world prices, especially when the 2006 reform aimed specifically at removing dumping that the Brazilians blamed for the 1968 scheme.

Two years after the end of sugar quotas the sector is in crisis

The profitability of beet production is at an all-time low, the promised private risk management tools are not there and tensions are increasing within the sector and among certain actors. On the side of the European sectoral regulator, the European Commission, there were no other reactions than the creation of a working group despite various requests from Member States. In September 2017, however, the Commission stated that it was "convinced that, after one or two marketing years, beet and sugar producers will have fully adapted to the new market environment. [...] The Commission will remain attentive to these possible evolutions and will not hesitate to make use of the safety net measures available to support producers ".

As for other productions, the dismantling of CAP regulation tools will not only have made losers: the competitiveness of the agri-food industry has been improved, the European food industry can now provide the lowest price. It will have been necessary to wait until the end of 2017 to know the big winner of the reform of the CAP of 2013: it is Coca-Cola which with purchases of 1 Mt of sugar on the European territory can now buy at 300 €/t against 700 €/t in 2013, a profit of 400 million euros per year!

Factory closures are announced, suggesting a drop in European production. Becoming a net importer is certainly the way to no longer contribute to global overproduction and hope for an increase - at least temporarily - in international prices. But is it a sustainable prospect for a heavy industry marked by high fixed costs where factories can hardly run low without increasing unit production costs? On the contrary, it seems essential to rethink a European sugar policy. To do this, in addition to the teaching that the end of quotas did not result from external pressures but from unfounded European decisions, putting into perspective the sugar policies of other major producing countries and the analysis of the fundamentals of the sugar market appear to be prerequisites.

4. Brazil and the European Union: the only two major producing countries "at international prices"

The review of sugar policies led us to produce six synthetic monographs in which the main instruments at work and their evolutions are analyzed. This work has been conducted for Brazil, India, Thailand, China, the United States and Russia. The table below (Figure 4) provides a synthetic reading of all these monographs.

2017/18 Campaign	Brazil	China	United States	India	Russia	Thailand	European Union
Producing rank	1st	5th	6th	2nd	7th	4th	3rd
Status	1st world exporter	Net importater	Net importater	4th world exporter	5th world exporter	2nd world exporter	3rd world exporter
Dynamics of production (5 years)	Stable	Stable	Stable	Increase	Strong increase	Strong increase	Increase
Type of culture	Sugar cane	Cane and beets	Cane and beets	Sugar cane	Sugar beets	Sugar cane	Sugar beets
Production quotas	No	No	Yes	No	No	Yes	No
Border protection and minimum prices	No	Yes	Yes	Yes	Yes	Yes	No
Biofuels as a regullatory outlet	+++	No	+++	+++	No	+++	+

Figure 4 : Summary of sugar policies in the world

It appears that the sugar policies of the main producing countries are still interventionist. Even in Brazil, which has no quotas, no minimum price, and no border protection, the incorporation of ethanol into fuels is a lever for regulating the sugar market. Brazil may be the world's largest sugar exporter, but there are more rods for ethanol production than sugar, and the rate of incorporation is, to some extent, adjustable. Thailand, the USA, India and the EU are also using this alternative outlet for sugar.

Although suppressed in the EU, production quotas still exist in the United States and Thailand. The American quotas are strict and do not allow production out of quota, while in Thailand it is a double system. The latter is also being reformed following recent attacks, similar to those that the EU experienced with respect to the 1968 regime.

Apart from Brazil, all countries have customs import protection. Russia has a variable exchange rate system that offers legibility to economic actors: rates depend on the level of entry prices and are known in advance.

The combination of country-specific instruments is directly reflected in domestic prices. The graph below (Figure 5) shows the average price of white sugar in 2018 for the 7 major producing countries. The height of each stick is proportional to the price and the width to the quantity produced. The European average is slightly higher than the Brazilian average because as shown in Figure 5 below, the two prices did not meet until the year 2018.

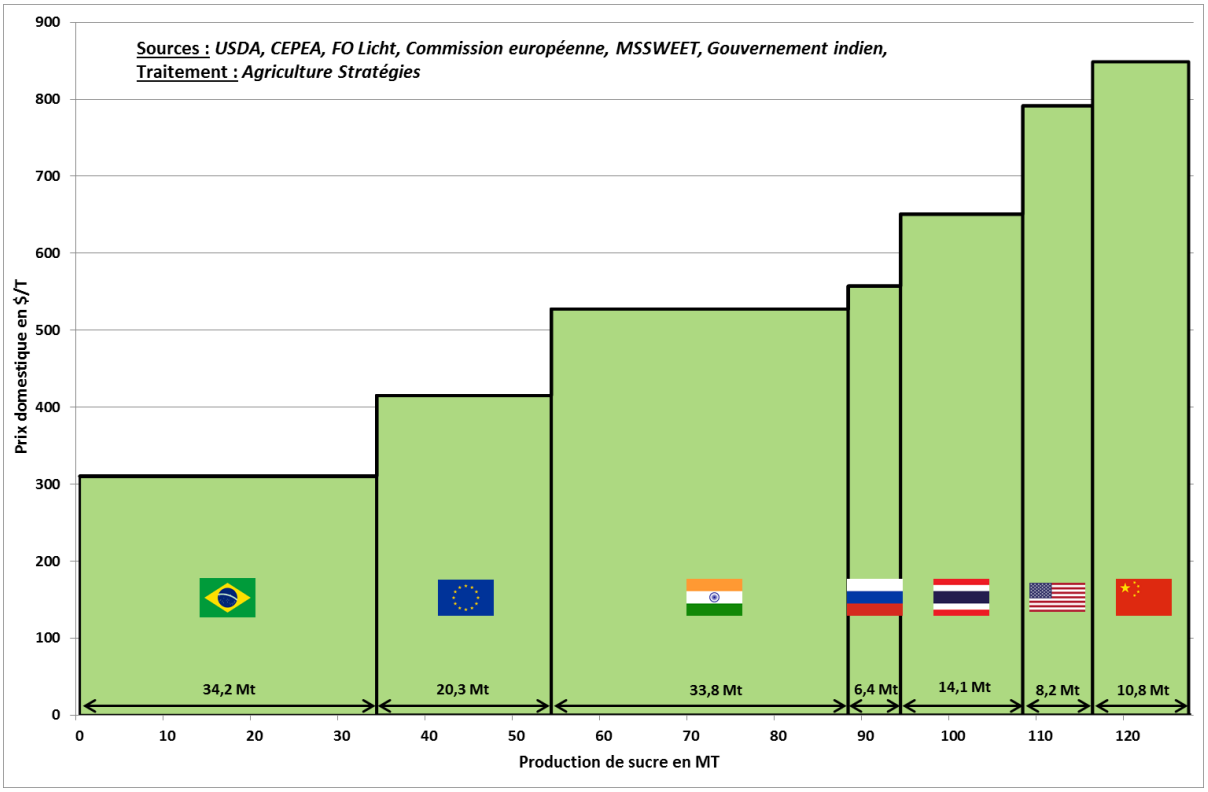

Figure 5 : Prices of refined sugar and quantities produced by the main world producers in 2018

The main conclusion in the graph above is that there is no "world sugar price". The international sugar price corresponds to Brazilian exports and the EU is the only major producer country to be directly connected to this price with the end of sugar quotas. The international price is not an equilibrium price, but the price of the most productive producing country, which no other country can afford without protection. It is therefore not an equilibrium price, which in theory stands at the intersection of aggregate supply and aggregate demand and which must correspond to the cost of production of the less competitive producers but nevertheless necessary to satisfy the demand.

5. Fundamental analysis shows the structural instability of the sugar market

Figure 6 shows world production, consumption and stocks of sugar based on FO Licht reference data. Since 2000, production and consumption have evolved similarly from 130 Mt to 190 Mt. Over the 19 years, only 5 have seen consumption exceed production, this is particularly the case of the 2008 and 2009, application of the reduction of European production. The stocks (green batonets) show astonishing stability: over the period they are in a narrow range between 60 Mt and 80 Mt.

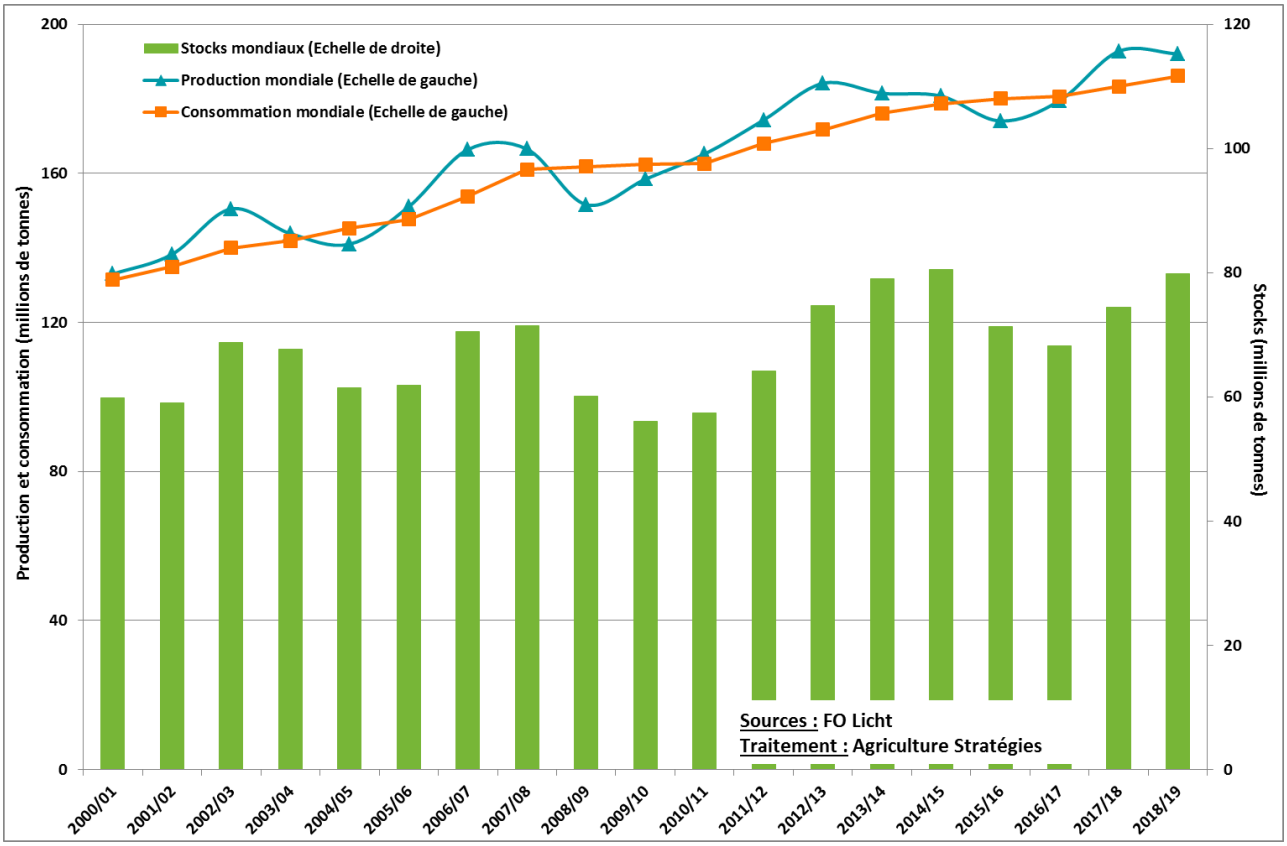

Figure 6 : Production, consumption and world stocks

To analyze the formation of prices and the sensitivity of a market to the equilibrium between supply and demand, it is customary to put the evolution of prices in terms of the stock-to-consumption ratio (Figure 7). Since 2000, this ratio has ranged between 35% and 50%, while the annual average prices, representative of international trade, ie Brazilian export prices, have varied between 200 and 500€.

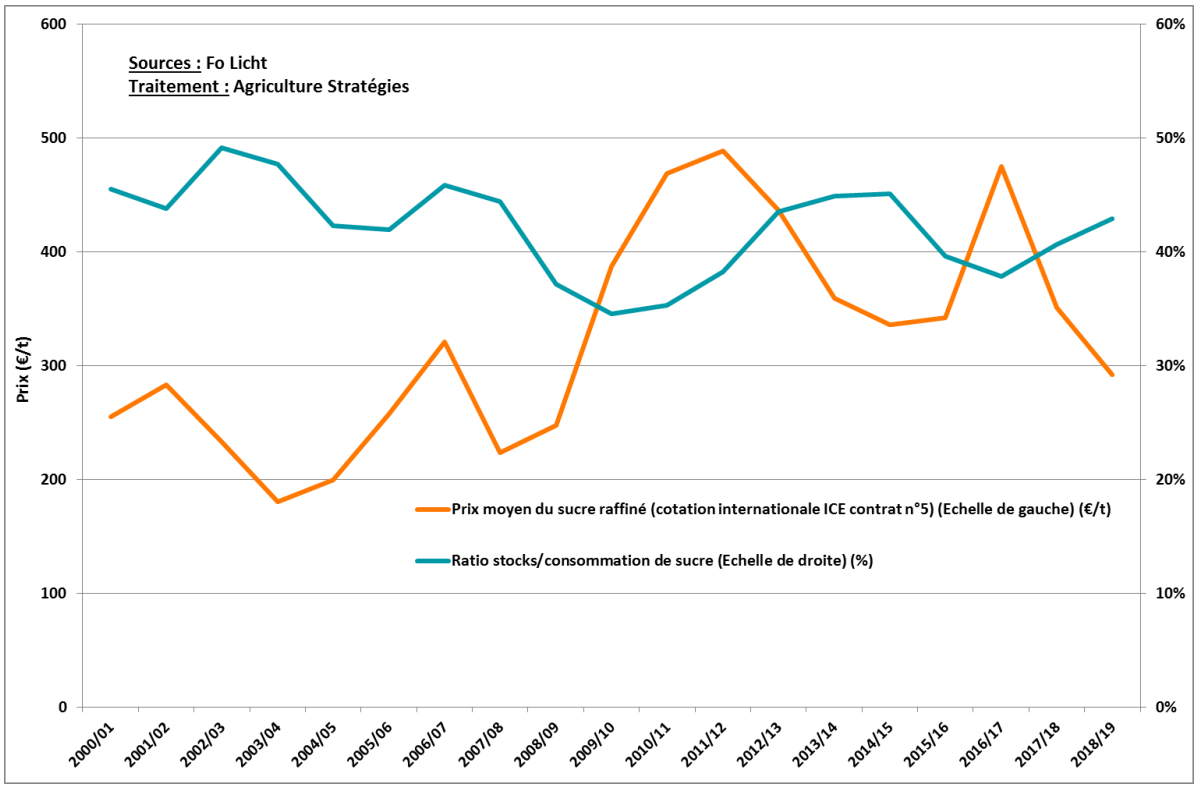

Figure 7 : Evolution of prices and stock to use ratios

Thus, everything happens as if with a stock level corresponding to 127 days, or nearly 4 months, the market considered that it was close to the shortage and that it was necessary to send a message of scarcity, via a rise of price, to encourage producers to produce more. Conversely, with the equivalent of 6 months of consumption, the market is depressed and prices are at their lowest.

The difference between these extremes is only 2 months of consumption, or about 32 Mt of sugar. So if we take the pivot value of 5 months of consumption as an adequate stock level, it appears that with a stabilizer wheel of 16 Mt, we would be able to rebalance the fundamentals of the international market regardless of the shocks on the supply or on request. Given the natural outlet for sugar, ethanol, which already serves as adjustment variables for major exporters, it is quite tempting to convert the 16 Mt sugar wheel into ethanol and bring it back to annual world consumption. of oil. With one tonne of sugar per 1250 liters of ethanol and an annual consumption of 100 million barrels per day, it is established that the stabilizing flywheel of 16 million tonnes corresponds to 0.34% of the annual consumption of oil.

This figure highlights the importance of greater flexibility in biofuel policies and their coordination at the international level. The Brazilian example, long engaged in this process, has already been widely copied by most of the major producers. At a time when the WTO's agricultural rules are being challenged and we are looking for a new multilateral framework for food security and the fight against climate change, the coordination of more flexible biofuel policies should be seen as the means to favor food uses while having stabilizer for international markets and pursuing the development of renewable energy.

By way of conclusion: the urgency of a new European sugar policy

The abolition of the reformed quota system in 2006 was a consequential error of collective euphoria and ideological orientation, where faith in the proper functioning of markets has laid the foundations for the justification of public intervention on the markets agricultural markets, foundations more than ever respected in other major producing countries. If we can expect a rise in prices in the next few years of the decline in European production or Thai exports whose sugar policy is being reformed, the future of the European industry is compromised if a new sugar policy is not started in the short term. Collective thinking must be initiated because the European Union cannot turn its back on its responsibilities with regard to the security of its sugar supplies, the stabilization of international trade and the development of renewable energies to prepare the post-oil era.

Annex I: The sugar policy in Brazil: regulation by ethanol

Brazil is currently the **world's largest sugar producer with nearly 40 million tonnes, or 22.5% of world production in 2016**[1]. It is also the world's largest sugar exporter, with 29 million tonnes of sugar when adding raw sugar (24Mt) and reffined sugar (5Mt). With 43% of world sugar exports, Brazil is the leading player in the international market, where it sells more than 70% of its production.

In Brazil, sugar is entirely derived from sugar cane cultivation. **Cane production is highly concentrated in the south of the country, particularly in the state of Sao Paulo** (Figure 1). The level of integration of production is high: 60% of cane production is directly produced by the sugar factories that hold the land or rent it[2]. The rest of the production is done by independent producers who engage in contracts covering one to two production cycles of 6 to 8 years each.

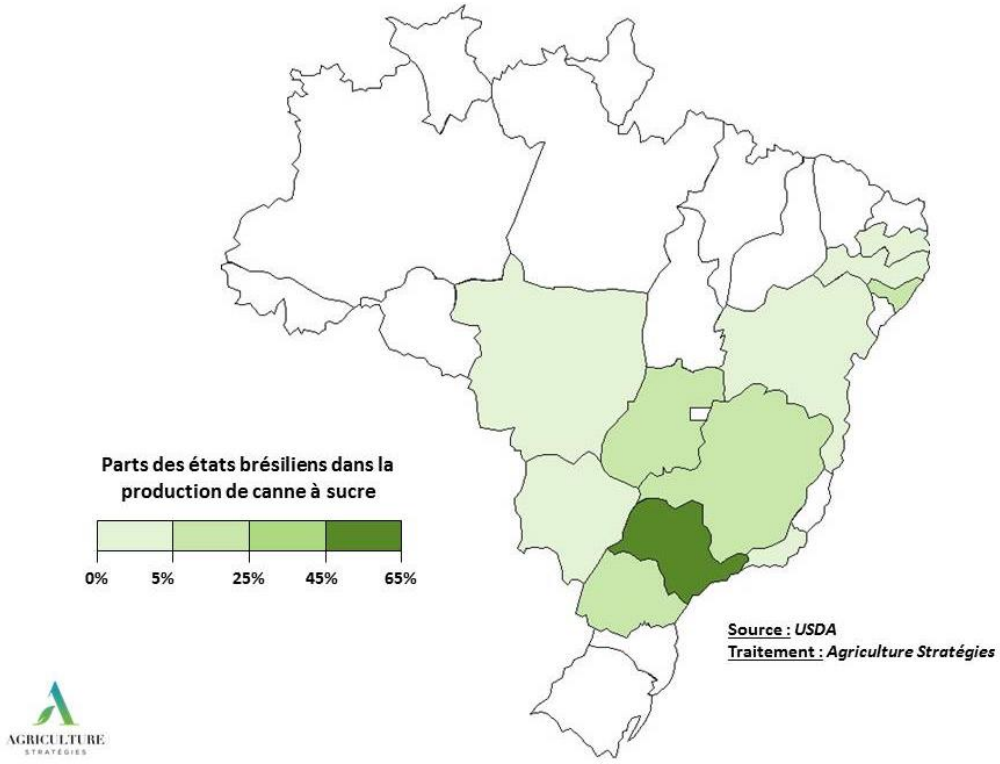

Figure 1 : Distribution of sugar production in Brazil

Brazil's sugar super power status was built thanks to strong state intervention in a country where the agricultural and agri-food sector account for 23.5% of GDP in 2017[3]. The most widespread support in Brazil is the improvement of interest rates. This leverage is all the stronger in a country where normal rates are highjust like inflation, which reduces the burden of reimbursements.

Ethanol, the main outlet for cane

For the production of sugar, or more precisely for the production and processing of sugar cane, the main explanation for the development of the sector is to be found in the various regulatory frameworks that have succeeded each other since the 1930s in order to encourage the consumption of ethanol as fuel. Sugarcane can be processed into either sugar or ethanol. But if initially ethanol was seen as a complementary outlet to overcome the depressed international demand for sugar, the weight that has taken this outlet is now so great that the hierarchy between the two markets has been reversed. Indeed, **if more than 70% of the sugar traded on the international market is**

Brazilian, in 2017 more sugar cane was transformed into ethanol (55%) than sugar (45%), and only 6% of the ethanol produced in Brazil is exported.

As Edouard Lanckriet[4] explains, since its emergence in the 1930s, the regulatory framework for sugar-ethanol has been highly dependent on the price of oil and sugar: the most favorable periods for the political support of ethanol are those where oil prices are high and international sugar prices low.

Since 1930, the rate of incorporation of ethanol in fuels is indeed the main lever to adjust the energy market as an outlet for sugar cane, especially since the government still holds more than 50% of the votes in the board of directors of Petrobras, the key player in the Brazilian fuels market. In addition, the evolution of engines has raised the ceiling for the incorporation of ethanol in gasoline: in the first stages ethanol-only engines had developed, and then more importantly in the 2000s it is the development of flex-fuel engines that operate indifferently with pure ethanol or with a gasoline-ethanol mixture[5]. Thus, in 2017, while ethanol represents 45% of the fuels consumed in Brazil, 61% of ethanol is consumed without mixing it in aqueous form and 39% in mixes in its anhydrous form.

The rate of incorporation of anhydrous mixture ethanol into Brazilian fuels is therefore an important variable in the regulation of the international sugar market. As shown in Figure 2 below, this rate has fluctuated between 20 and 27% between 2005 and 2018. All things being equal, it appears that at this level, **a 1% change in the rate of incorporation is translated by a reverse sign variation of 1.4% of Brazilian sugar exports**[6].

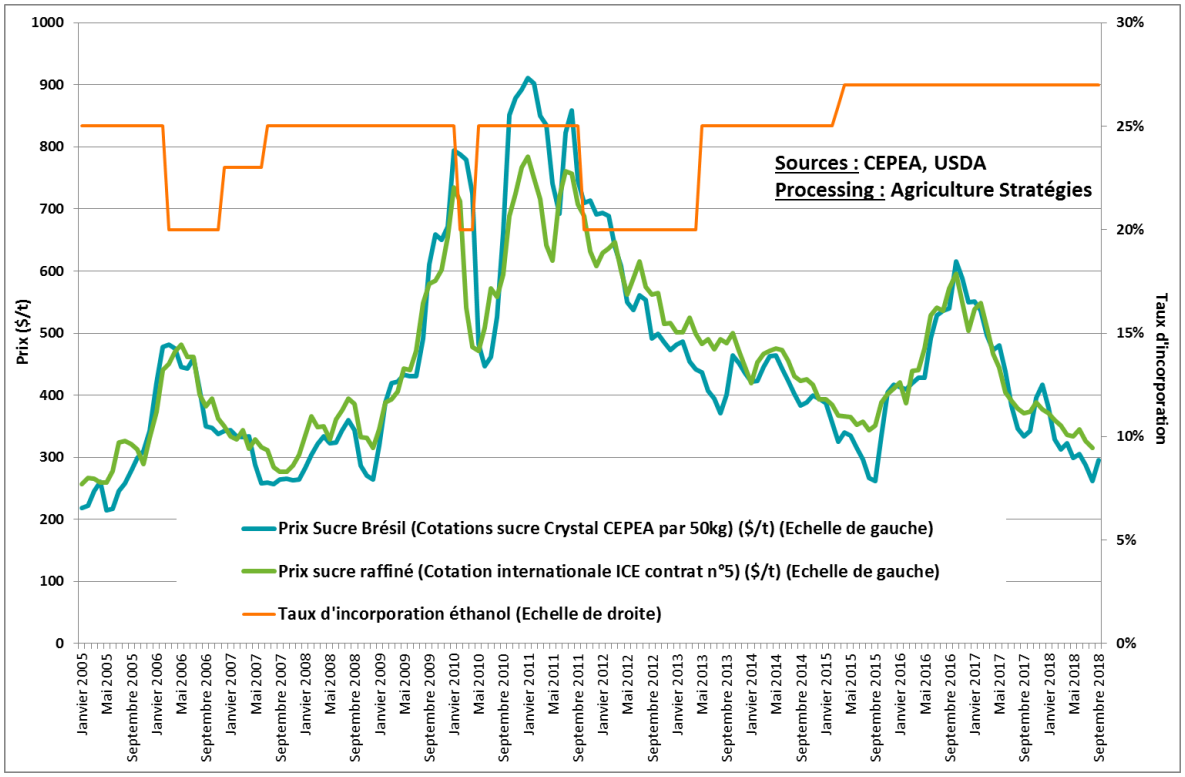

Figure 2 : Évolution des prix du sucre et du taux d'incorporation d'éthanol au Brésil

As can be seen above, decreases in the rate of incorporation were decided in 2006, in 2009 and in 2011 during the run-up in sugar prices. Despite the current low prices, the rate could not be higher than 27%, which corresponds to the ceiling of non-flex-fuel engines. The rate of incorporation is indeed at its maximum and could only act as a stabilizer in the event of sharp increases in the price of

sugar. **It is therefore on the side of the increase in the fleet of flex-fuel vehicles that we can expect an increase in demand for ethanol.**

In the end, Brazil's sugar and ethanol policy highlights the interest and limits of market regulation instruments based on the development of an alternative outlet. It has the advantage of stabilizing markets as long as flexibility and responsiveness are sufficient to be part of a countercyclical piloting of markets. In this respect, Brazilian policy has been rather exemplary.

However, in the face of competitors who do not master (anymore) their supply of sugar for export, the action of Brazil alone to prevent sugar prices from settling in the depression will remain limited. Moreover, when an alternative outlet becomes the main valuation, the risk is high that the policy loses its original purpose of stabilizing markets. This is what we can fear from the announcement of the implementation from 2020 of the Renova Bio program by former President Temer, which aims to double the production of ethanol by 2030 via a fuel-specific carbon emission quota system.

Annex II: The sugar policy in the United States: a continuous management of the internal market

The United States currently rank 6th among sugar-producing countries with about 9 million tonnes or **4.7% of world production in 2016**[1]. One of the main features of the United States is to **produce almost as much sugar from sugar beet (56%) than cane (44%)**. Sugar beets are found mainly in the north and west of the country (34% of beet production in Minnesota), while sugar cane has historically grown in the southern states (Florida, 54% of cane and Louisiana, 38%) as can be seen on the map below (Figure 1).

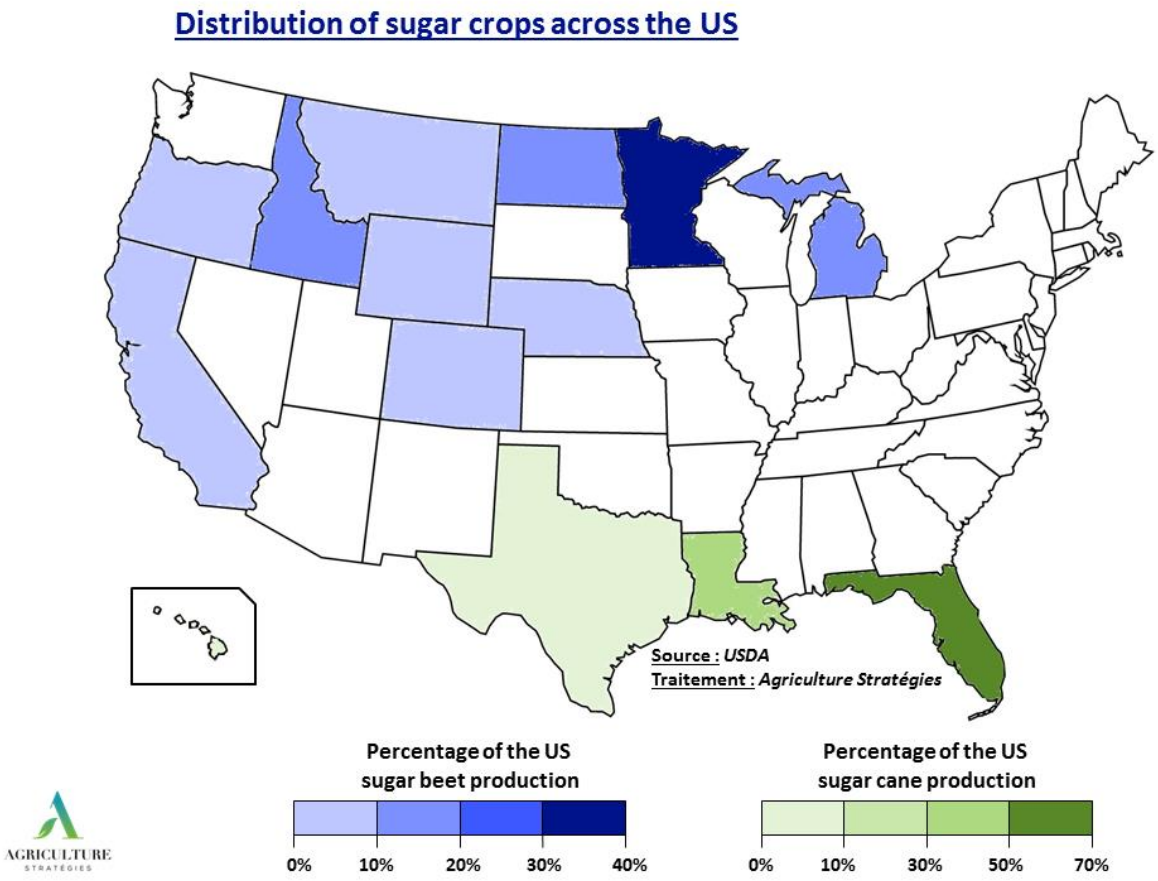

Figure 1 : Répartition de la production des cultures sucrières aux Etats-Unis

From the 1970s to the early 2000s, **sugar factories became essentially the property of producers, grouped into cooperatives**[2]. Aside from this movement of vertical integration controlled by farmers, the two US sugar sectors have not undergone any major changes since the reform of the 1981 Farm Bill, which lays the foundation for the current regulatory framework[3]. Since then, institutional stability has been in place, apart from a few changes to deal with the consequences of NAFTA - the North American trade agreement - and imports from Mexico that have gradually become royalty-free after a period of adjustment. years.

Having established the **objective of covering 85% of their domestic sugar consumption**, the two US sugar sectors are not in the situation of cereals and oilseed crops for which, as exporters, they are directly dependent on the volatility of international courses. This explains in particular why **beet and cane surfaces are not concerned by counter-cyclical aid programs** as for most other crops.

The American sugar policy is based on four pillars:

- A minimum sugar price via the repayable loan mechanism in kind (non recourse loan)
- Production quotas allocated to processors to control supply
- Import quotas and disincentive customs duties
- Two systems of release: one for the transformation of sugar into ethanol, the other for the re-export of refined sugar on the American territory.

Minimum prices are set at $ 413 / t for raw cane sugar and $ 531 / t for refined beet sugar[4], which is a price level rarely achieved by international trade quotations. **Production quotas are distributed annually to processors** and can not be less than 85% of US consumption. If the sugar factories exceed their quota, **they must sell this surplus to another processor, store it at their expense or possibly export it.**

The United States has a very responsive import protection system. Excluding the import quota, **customs duties are prohibitive and amount to $ 338 / t for raw sugar and $ 357 / t for refined sugar.** Import quotas have a low tariff (about $ 15 / t) and can be adjusted during the year based on US production prospects and imports from Mexico. The level of import quotas, however, can not fall below the **US commitments to the WTO is 1.539 million tonnes.**

Mexican production is thus followed with the greatest attention since **import flows from this country constitute one of the main variables that were beyond the control of the regulator**[5]**.** The rise of sugar production in Mexico motivated the US Congress in 2008 to allow the USDA to resell sugar stocks to biofuel processors in the event of market congestion, in addition to public which remains activable.

But it is especially from 2013 when the spirit of NAFTA and the free access to the American market began to be questioned. That year, **Mexican exports peaked at 1.8 million tonnes, driving down prices until the feedstock flexibility program was activated**[6]**.**

Negotiations between the two parties then led to the **imposition of a revised export quota for Mexico each year to ensure a balanced US market**. In addition, a system of minimum exit prices was established in Mexico following a dumping investigation, for a **minimum price of $ 573 / t for refined sugar**[7]. In 2017, adjustments were made to this agreement, the Mexican minimum prices were slightly raised, **the portion of refined sugar in the Mexican annual quota increased from 53% to 30%**[8] and finally Mexico has a priority over access to additional imports granted during the year

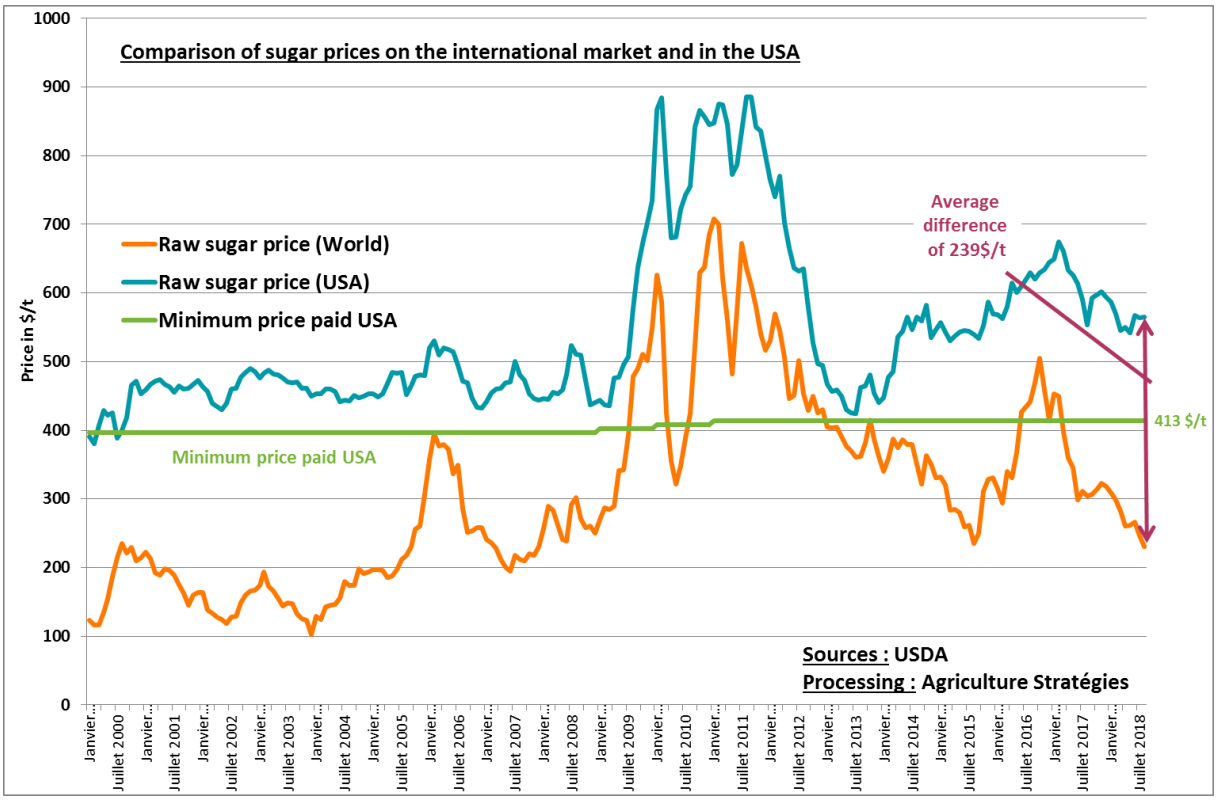

Figure 2 : Evolution of sugar prices on the international market and in the USA

The evolution of domestic and international prices since 2000 (Figure 2) tends to show that **these different tools are used effectively to ensure the equilibrium of supply and allow domestic prices to be above the minimum price**. At more than $ 500 per tonne of raw sugar, US industries remain protected from the crisis of overproduction that currently affects international markets. **On average since 2000, domestic prices in the United States were 66% higher than international prices, a differential of $ 239 / t.** The control of Mexican imports also shows the American pragmatism in trade: included among the sensitive topics of NAFTA, an agreement was reached as of mid-2017, well before the announcement of a new agreement United States - Mexico in August 2018.

Annex III: The sugar policy in India: a major producer seeking to stabilize its market

India is currently the world's second-largest sugar producer with about 22 million tonnes or 13% of world production in 2016. This production comes from sugar cane, whose production is found throughout the country, but whose heart is located mainly in the state of Uttar Pradesh in northern India (46% of national production in 2016) (Figure 1). Commercial relations between farmers and sugar factories are highly regulated: producers are attached to a processing plant which is obliged to buy their cane at a minimum price set by the public authorities. In addition, the government regulates the opening of new sugar mills that cannot be located less than 15km from an existing processing site.

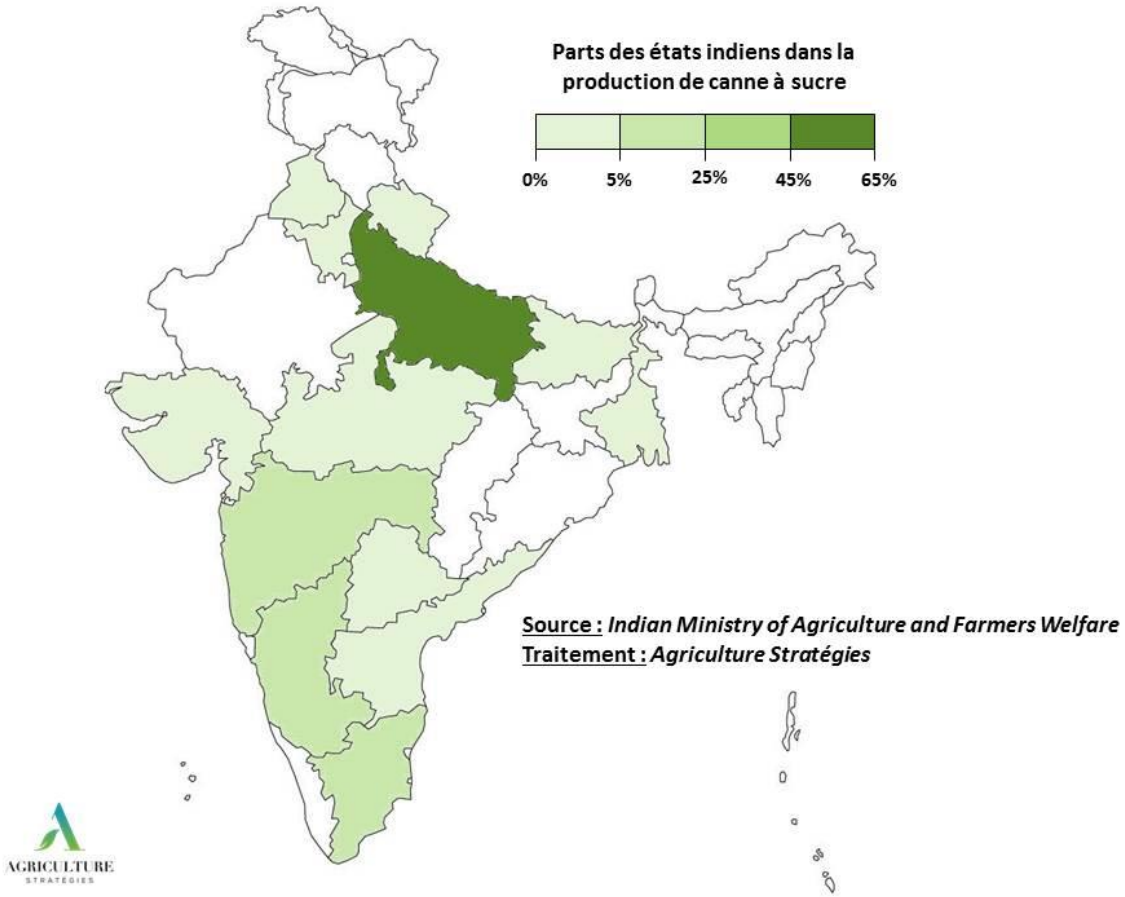

Figure 1: Distribution of sugar cane production in India

The sugar sector in India remained relatively marginal (less than 5% of world production) until the mid-1990s when production increased significantly. The variations in production are very strong and India has been oscillating for more than 25 years between the status of exporter and that of sugar importer. These import requirements in 2009 and 2010 had largely contributed to the rise in international prices. Since then, it has remained a net exporter (exporting more than it imports) and exported 3.2 million tons of sugar in 2016 (4.7% of world exports) (Figure 2).

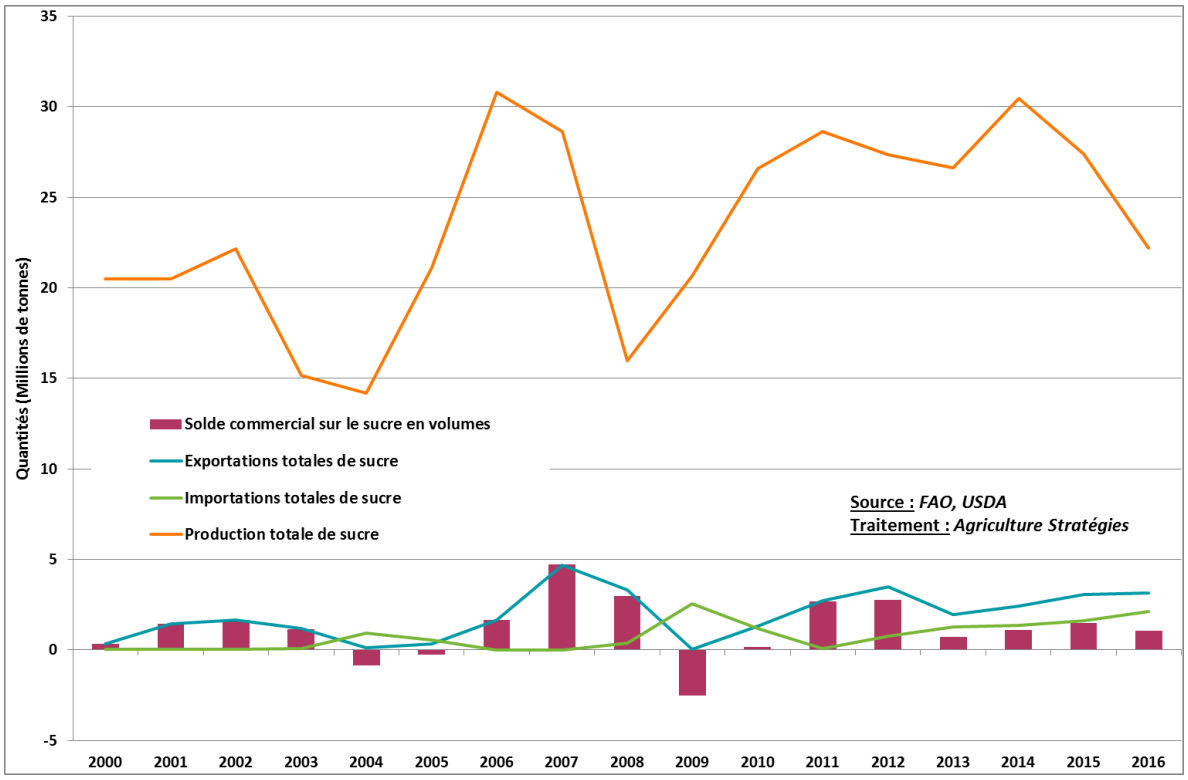

Figure 2: India's Imports, Exports and Trade Balance on Refined Sugar

India's agricultural policy has regulated sugar production since 1966 and the "Sugarcane Control Order" still in place today. This policy establishes a sugar cane pricing system governed by both the federal government and the governments of each state. A minimum price per state is also introduced, it is generally higher than the federal price: in the main cane producing region (Uttar Pradesh) this price was $ 41 / t against $ 34 / t at the federal level.

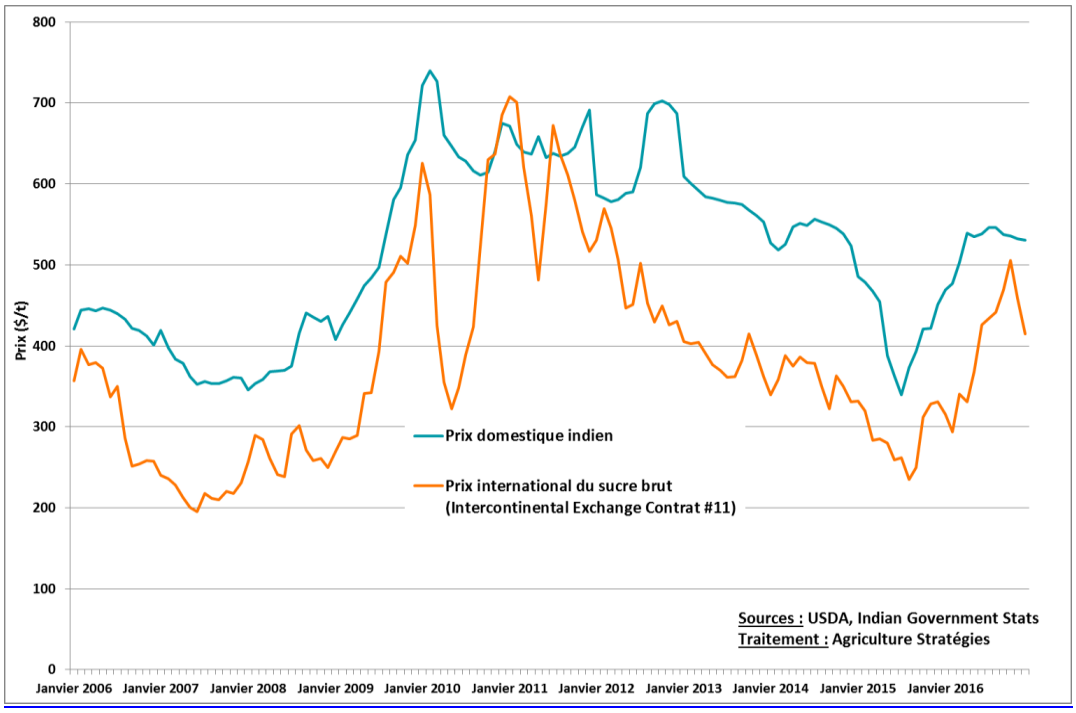

Figure 3: Sugar prices in India, domestic and international markets

Historically, processors also had constraints on their sugar sales. Part of the output (10% in 2012, but sometimes much more) was to be sold to the government at prices well below market prices in order to be redistributed to people living below the poverty line. Since 2013, these provisions have been abolished and processors can now freely sell their products on the domestic market. For its food aid program, the government buys sugar directly, which it wants to redistribute to the poorest at lower prices. These purchases of sugar by the government concerned more than 4 million tons in 2013, which gives the public authorities a certain power of orientation on the evolution of the domestic market.

In order to stabilize its domestic market, India uses different levers. Average tariffs of 40% are applied on sugar. In case of deficit production, they can be reduced to zero (this was the case in the late 1990s and in 2008-2009), just as they can be increased in case of overproduction as early as 2018 when they were raised to 100 % to cope with falling prices.

To relieve its domestic market during the 2013/2014 and 2014/2015 marketing years, export subsidies were also used before being replaced by minimum export quotas imposed on processors from the 2015/2016 marketing year. . These quotas represent a very significant part of Indian exports.

All of these measures place a heavy burden on Indian processors. The latter ended up accumulating significant delays in payments to farmers (more than $ 3 billion cumulated in 2015). To remedy this, the government launched a plan in 2015 allowing processors to borrow at zero interest rates from banks (the government taking charge of the interest) which has since helped to repay a little more than half of late payments.[1].

By moving into a net exporter status, the Indian government has embarked on reorientations to diversify its domestic market opportunities. The production of renewable energy (ethanol, electricity) from biomass is promoted by the government, one of whose objectives is to support the sugar sector, as recently stated by the Minister of Petroleum: "We want our Sugar producers get support and the sugar industries are stabilized ")[2].

In 2009, the government set itself the target of having a compulsory ethanol incorporation rate of 20% for ethanol in 2017. In addition, a regulated price system for ethanol has been in place since 2014 to encourage to the consumption of this fuel. The incorporation target, far from being achieved with only 3.3% in 2016, has been renewed by 2030. To claim to reach it, producers have been allowed since 2018 to use cane juice directly whereas previously only the use of molasses was allowed. Investment in cogeneration structures from bagasses (the rest of the canes once the juice has been extracted) is also encouraged by the government.

Like other countries, India is seeking non-food valuations to find new markets and better manage its internal market without resorting to destabilizing measures for international trade. This new direction, if successful, will no doubt allow it to respond to Australia, which began WTO proceedings in November 2018 to denounce the effects of India's sugar policy on international trade.

Annexe IV : La politique sucrière en Thaïlande : une remise en cause récente

With around 10 million tonnes, Thailand was the 4th largest producer of sugar in 2016, accounting for 5.8% of world production. This production comes from sugar cane, whose production is fairly evenly distributed between the provinces of North and East of Thailand (Figure 1). The sector has more than 300,000 producers, grouped into 33 associations of planters who deliver 55 processing plants[1]. Commercial relations between planters and factories are highly regulated: the sharing of value is administered by the State.

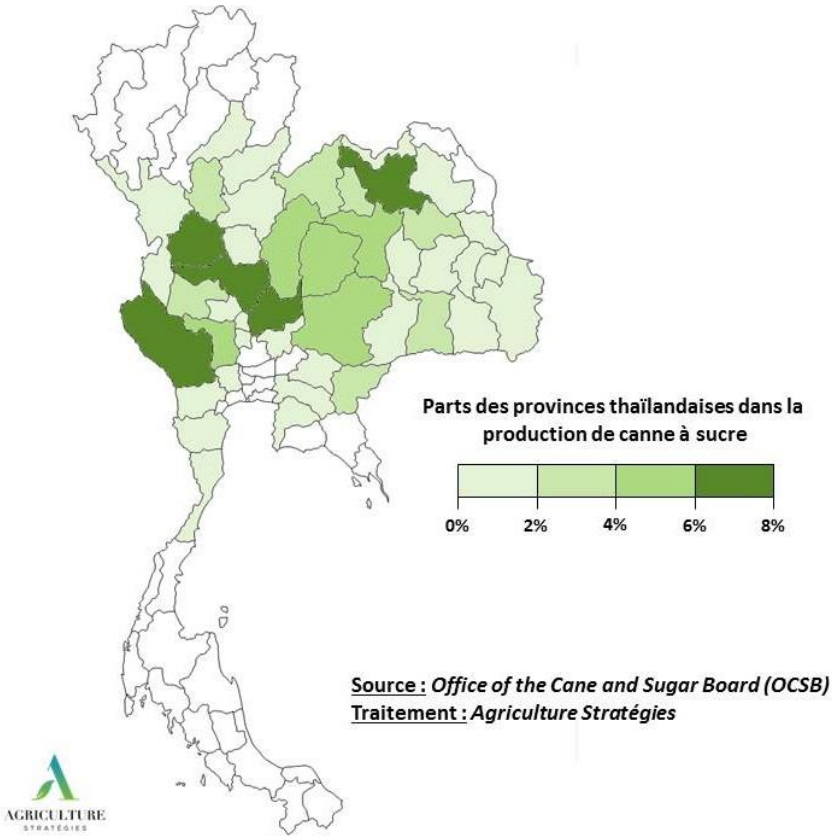

Figure 1: Distribution of sugar cane production in Thailand

The Thai sugar sector developed gradually from the 1980s. From marginal production in the early 1960s (less than 150,000 tonnes of sugar per year), it grew to an average of 10 millions of tonnes at the beginning of the 2010s. This transition is due in particular to a voluntarist policy that has allowed it to flourish.

In 1984, the Cane and Sugar Act came into force following a crisis of overproduction that affected domestic sugar prices. This legislation introduced a minimum internal price, a triple-quota system that is quite similar to the European regime of the time and a control of the distribution of value between planters and sugar factories[2].

The quota sugar A is sold on the national market at the price fixed by the government, it represents 2.6 million tons. B quotas, which cover 800,000 tonnes of raw sugar for export, are regulated by the Thailand Cane and Sugar Corporation (TCSC). Finally, if these two tranches are exceeded, the processors export the surpluses without quantity constraints. The cane price for producers is based on the valuation of sugar factories: after taking into account processing costs, the value is divided

between producers (70%) and sugar factories (30%)[3]. Figure 2 shows the domestic minimum price, the main Thai export quotation, and the international benchmark.

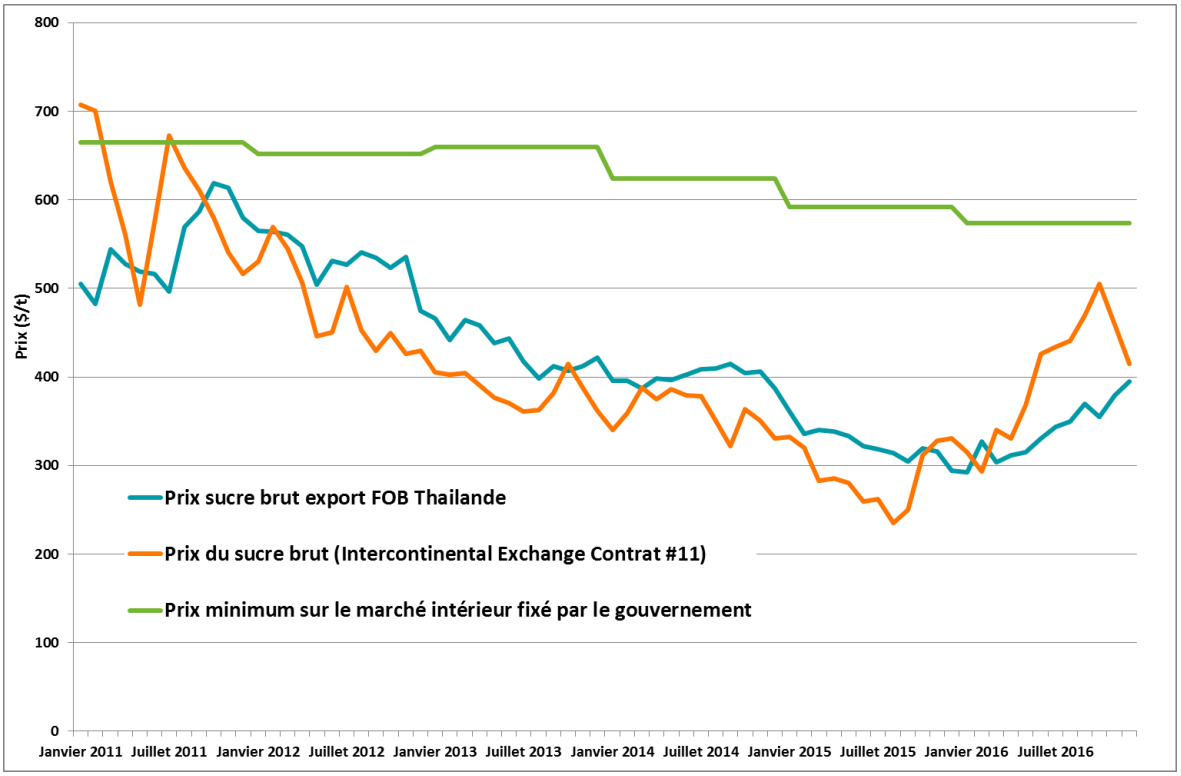

Figure 2: Sugar prices in Thailand, out of the territory and on the international market

In addition to value sharing, payment on delivery of the cane is also taxed. In case of overpayment compared to the actual valuation established at the end of the campaign, it is the State that reimburses the processors. Associations and federations of producer associations act as intermediaries between producers and processors.

The triple-quota system is funded in part through the levying of a tax on sugar sold on the domestic market and a 7% VAT, paid to the "Cane and Sugar Fund", which in turn provides support to investment for processors and producers. In addition, this policy is accompanied by border protection, with sugar being taxed at $103/t, with the exception of ASEAN[4] members who have preferential tariffs for access to the Thai market[5].

The calling into question

Victim of its success, the Thai sugar policy has been questioned. The significant development of its production has led Thailand to become a major exporter and thus to become more sensitive to fluctuations in international markets. In 2015, the authorities announced a "National Energy Plan for Thailand" whose objective is to develop alternative markets for cane through the production of ethanol with the objective that 25% of fuels come from biofuels by 2036.

Above all, in 2016, Brazil's WTO attack on Thailand's sugar policy pushed for far-reaching reform, not all of which has yet been finalized.

From the 2018-2019 season, the price of sugar on the domestic market is no longer fixed by the government, the quota system is entirely abolished and taxes abound on the public fund as well[6]. Processors still have the obligation to build a safety reserve of 250,000 tonnes per month in order to

protect the domestic market from possible shortages. According to USDA forecasts, these developments should lead to a 25% decrease in cane prices compared to their 2016-2017 level.

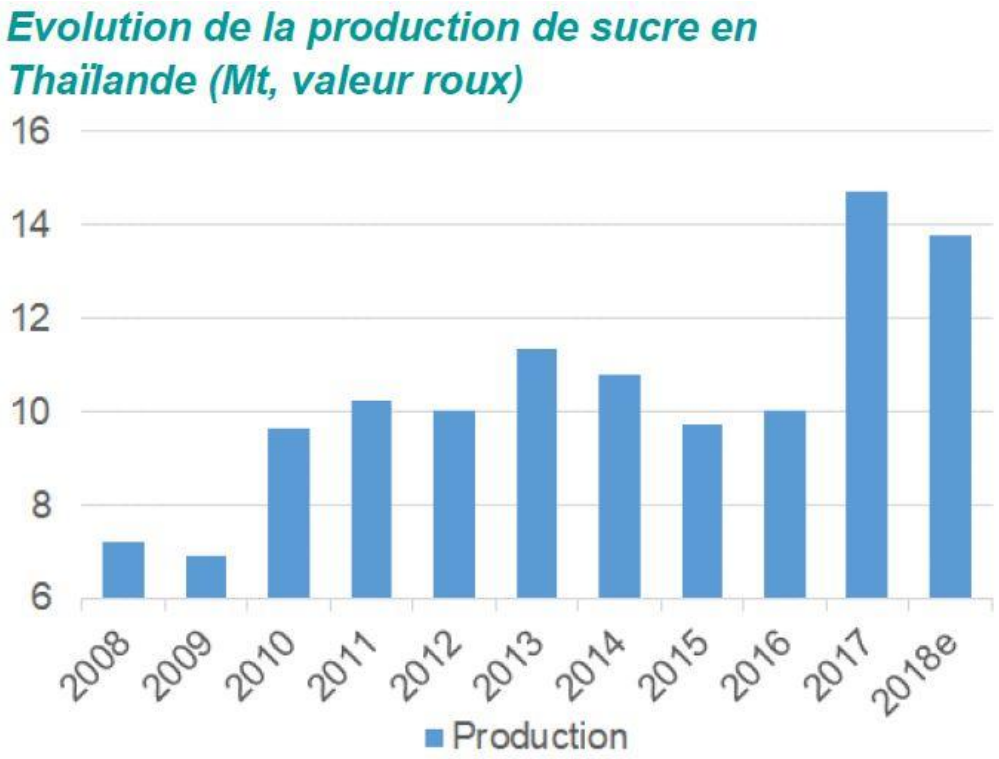

Figure 3: Evolution of brown sugar production in Thailand (Source: Cristalco)

As shown in Figure 3, Thai production continued to increase, reaching a record in 2017 with nearly 15 million tonnes, which allowed it to export 10 million tonnes or 16% of international trade. This rise is presented as the first factor explaining the fall in international prices with the end of European quotas. Four million tonnes of global production of more than 170 million would have been enough to turn the market around, further evidence of the extreme volatility of international markets where a small gap between production and processing results in significant price changes.

Despite the reform undertaken and the fall in prices that it has generated, production in 2018-2019 is expected to decrease slightly compared to 2017-2018, well above the previous years. Cane being a perennial crop and limited alternatives for producers, this is not surprising: in agriculture, as in all heavy industries, the price adjustment is above all a view of the mind. According to the USDA, production is expected to increase further in the coming years as two new processing plants and associated acreage are brought into production.

In the end, there is more to wait for the decisions of the Thai government which announced the development of oil palm plantations[7]. The government's objective is to increase the area of palm trees by two and a half times, in particular to meet the objective of increasing the share of biofuels in fuels and in particular biodiesel[8].

Annex V : The sugar policy in China: the sharing of value at the heart of the device

China is currently the world's 5th largest sugar producer with about 9.3 million tonnes, or 5.3% of world production in 2016. As shown in Figure 1, China has the distinction of producing both sugar from cane (in the south of the country, especially the Guangxi region which produces nearly 60% of Chinese sugar) and from beetroot (in the north). The proportions are nevertheless not balanced: 85% of the sugar produced comes from the cane. China has 270 refineries, belonging to 48 different groups, of which 233 are dedicated to cane.

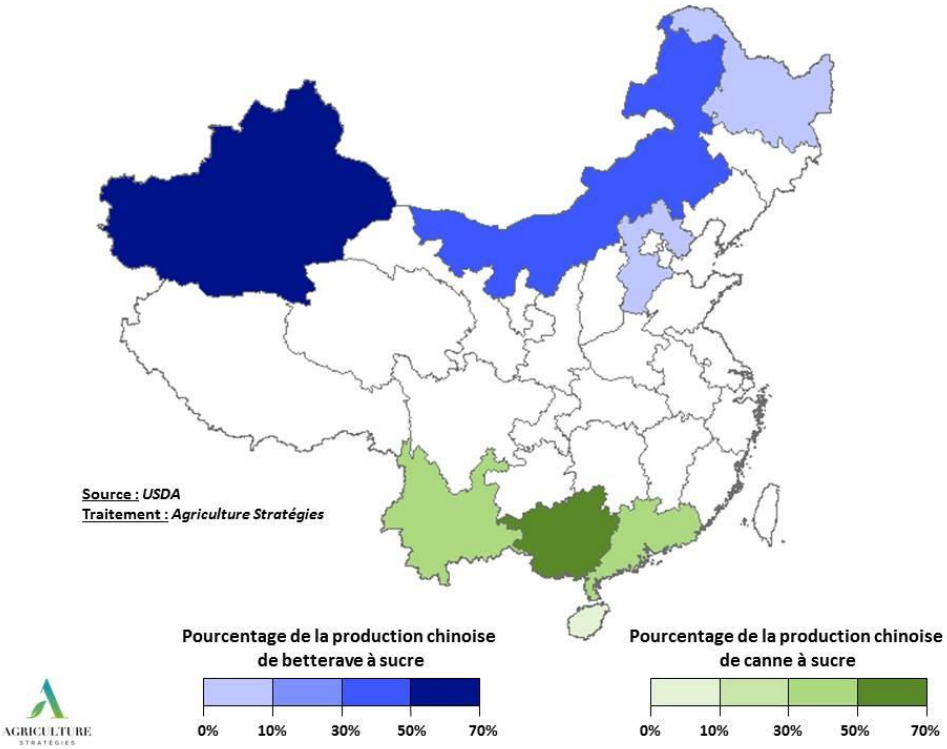

Figure 1 : Sugar productions mapping in China

To understand the development of the sector, we must go back to the five-year plan of 1953, which emphasized the development of processing structures. From a production of 1.4 MT in 1961, it rose to 7.4 MT in 2000.

In the 1990s, the government undertook a major series of reforms. On the processing side, these measures included a reduction in the number of operating sites and their modernization, the limitation of the production of artificial sweeteners (notably aspartame) to encourage the use of sugar and the encouragement of foreign investment. in Chinese tools. On the production side, the government has focused on increasing yields by maximizing research and agronomic methods (variety selection and quality seed production, phytosanitary treatments, efficient irrigation, etc.).

But the heart of the reform has been, first and foremost, the creation of a floor price incentive for farmers' remuneration. This floor price is dependent on the domestic price of Chinese sugar: farmers must be paid 420RMB / t (62 $ / t) for sugar cane when the price of domestic sugar is less than or equal to 5100 RMB / t (758 $ / t). On the other hand, when the sugar price is higher than this activation threshold, a value sharing is set up and the farmer must collect 5% of the difference between the price of sugar and this threshold of 5100 RMB / t. . In other words, when the price of

Chinese domestic sugar reaches RMB 5200 / t, farmers must collect RMB5 / t for their cane in addition to the floor price of RMB 420 / t, which is RMB 425 / t.

This floor price has been steadily increased over time: in 2005, it was RMB 160 / t and the value sharing activation threshold was a sugar price of RMB 2,400 / t. Formerly national, this floor price has been since 2013 left to the discretion of the various provinces concerned. Guangxi, for example, has decided to increase value sharing between farmers and processors by 5 to 6 percent.

Despite the progress of the sector, production in recent years has only covered between 60 and 70% of consumption, making China the second largest importer of sugar in the world, just behind Indonesia. Thus tariffs on sugar remained relatively low: 15% for WTO import quotas and 50% beyond. WTO quotas represent 1.945 million tonnes, about half of the 4 million tonnes of Chinese imports[1].

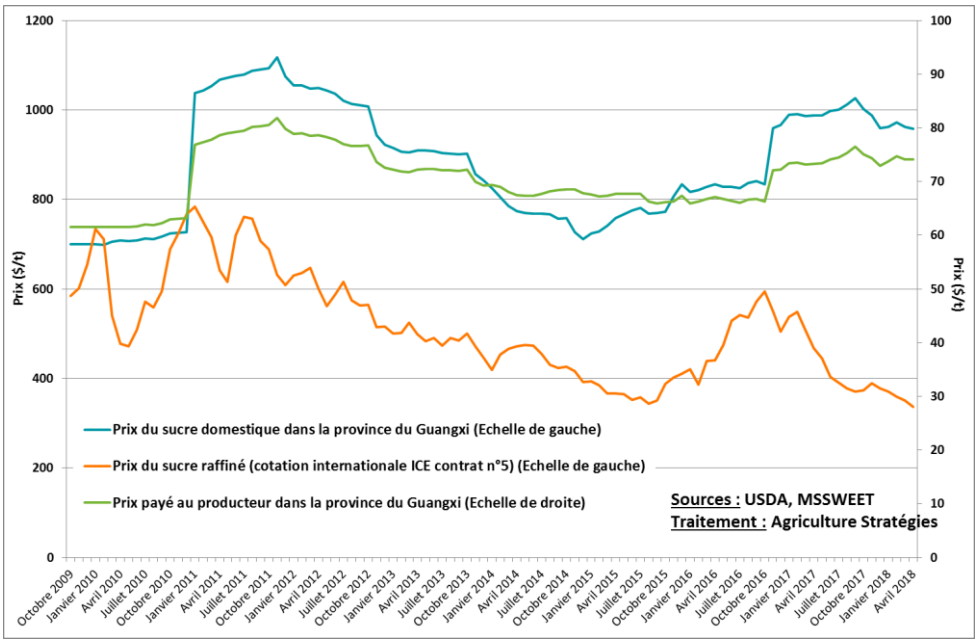

Figure 2: Evolution of sugar prices in China and remuneration of farmers

The fall in international prices observed since 2013 has hurt the regulation of the Chinese industry. The level of customs duties was no longer sufficient to guarantee the stability of the internal market. Processing plants have come under pressure and the value-added system has temporarily been abandoned in some provinces (Yunnan, Guangdong and Hainan).

The Chinese government has responded by adopting safeguard measures as WTO rules permit. Decided in 2015 and put in place since 2016, WTO tariffs outside the quota have been increased by 40%. For the 2017-18 campaign, they have even been increased by 45%. Contesting not the principle but the justification advanced for the use of these safeguard measures, Brazil attacked China at the end of 2018.

In terms of alternative outlets for cane and sugar beet, the sugar sector does not seem to be affected by the expansion of biofuel production, unlike biodiesel and ethanol, whose five-year plan set in 2016 set ambitious targets. quadruple the production of biodiesel and increase by two thirds that of ethanol. Nevertheless, 5% of the ethanol produced comes from cane or beet residues at present, the rest coming from maize (70%) and cassava (25%). A net importer of sugar, China does not need to find new markets for its sugar products[2].

Annex VI: The sugar policy in Russia : an import substitution strategy

Russia is currently the world's **seventh largest sugar producer with about 6.2 million tonnes or 3.6% of world production in 2016**. This production comes from the cultivation of sugar beets, whose production is located in the west of the country (Figure 1). **Production is particularly important in the extreme south-west of the country and the Krasnodar region** (20.6% of production)[1]. The sector is highly integrated: **agro-holdings, a legacy of former Soviet collective farms, account for 89% of sugar beet acreage in Russia**[2] and more or less directly control processing units.

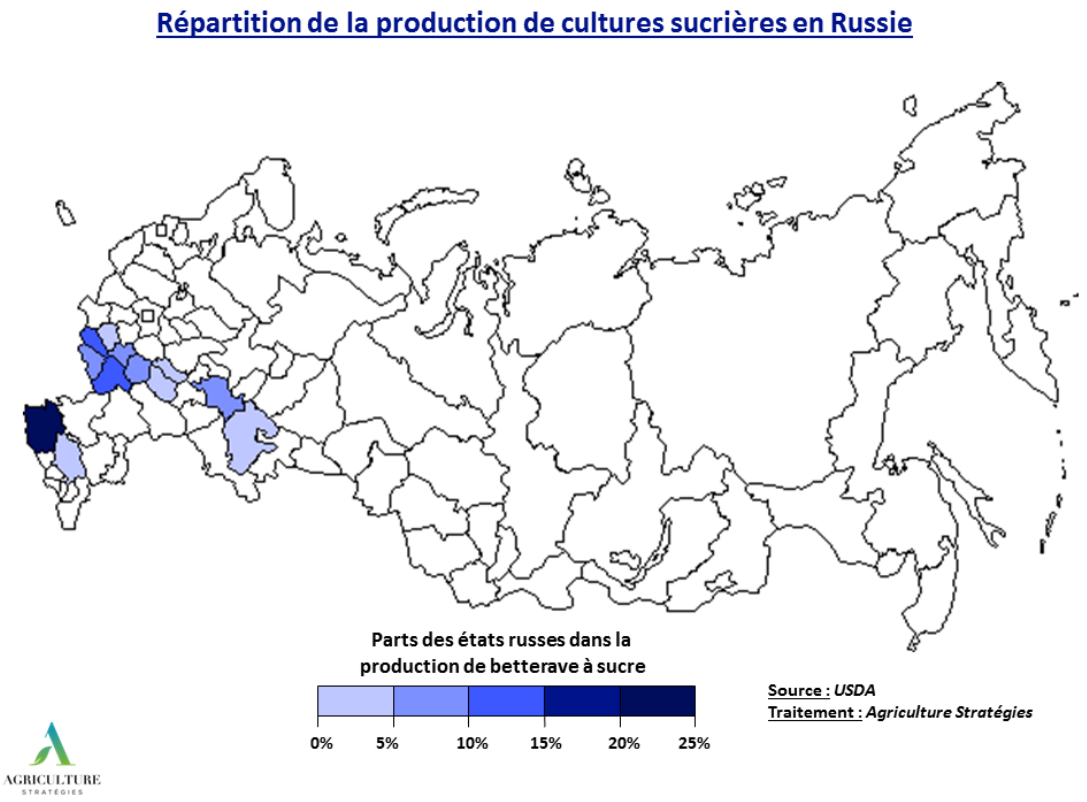

Figure 1: Distribution of sugar production in Russia

The sugar sector in Russia is currently experiencing a renaissance after a major decline. FAO statistics show a substantial production under the communist era: the USSR produced up to 69 million tons of sugar in the 1960s (almost a third of world production!). In 1993, Russian production was only 25 million tonnes (9.0% of world production) before reaching bottom in the early 2000s with only 1.5 million tonnes of sugar (1.2% of world production).

As shown in Figure 2, **the sector seems to rise from the ashes under the impulse of a strong political strategy concerning all agricultural productions** (for a detailed analysis see the article by Quentin Mathieu and Thierry Pouch in the journal Economie Rurale[3]). Indeed, **from the mid-2000s, agriculture was established as a national priority, and following the 2008 food crisis, this priority was translated into political action with the "food security doctrine" adopted by decree in 2010 that sets self-sufficiency targets for all agricultural products**[4]**.** Thus, for the sugar sector, a goal of 80% self-sufficiency was targeted for 2020, and has already been achieved: in 2016 less than 10% of Russian sugar was imported.

For the sugar sector, a $ 840 million program named "Development of the Sugar Complex of the Russian Federation for 2013-2015" was adopted in 2013 to support processors by providing assistance in the form of loans with a subsidized rate of interest[5].

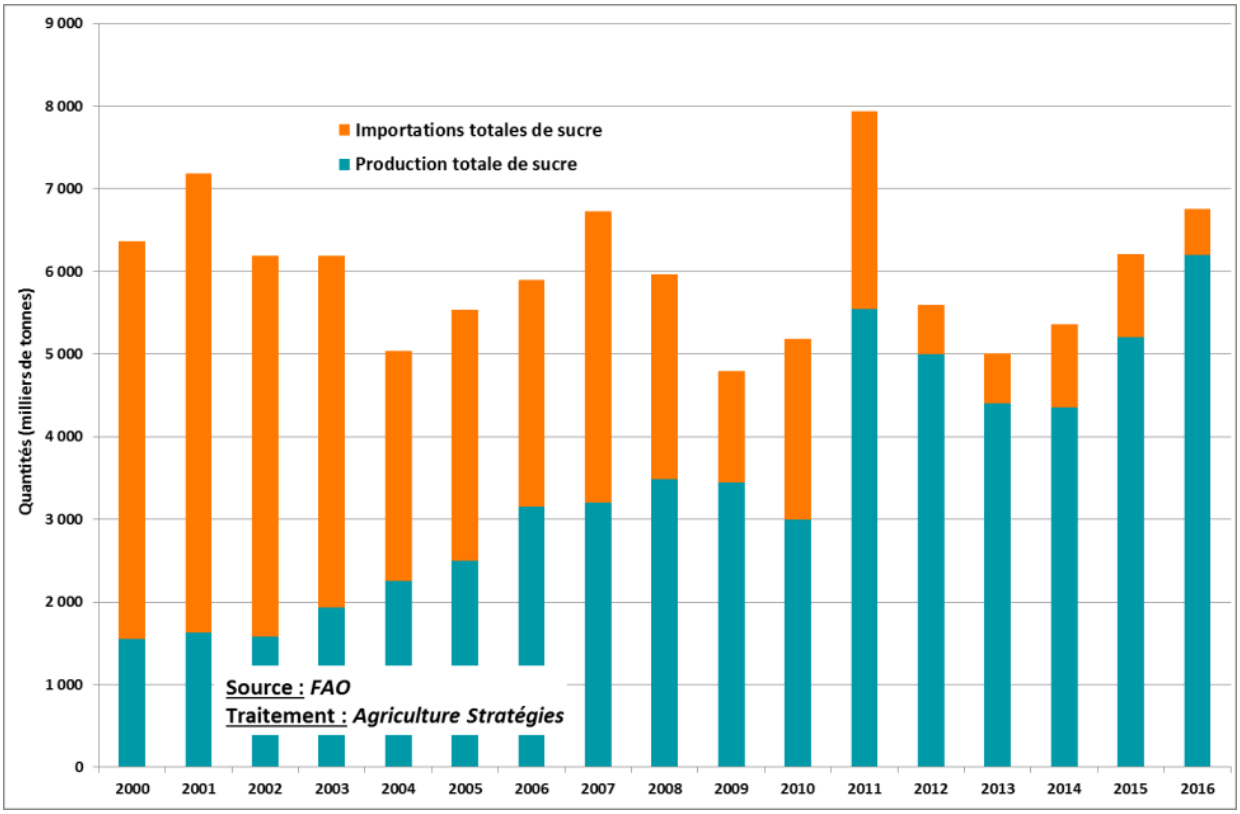

Figure 2: Evolution of sugar production and imports in Russia

Beyond investment aid, **it is mainly border protection that has allowed Russia to operate a real import substitution strategy**. For sugar, tariffs are steered in such a way as to stabilize domestic prices at a sufficiently profitable level to encourage the development of production. Thus, refined sugar is taxed at an almost prohibitive level of $ 340 / t. Imports therefore take the form of raw sugar which is refined on the Russian territory. They are **taxed at a rate that varies with the price of international trade:** when international prices are high, taxes are reduced, and vice versa (Figure 3).

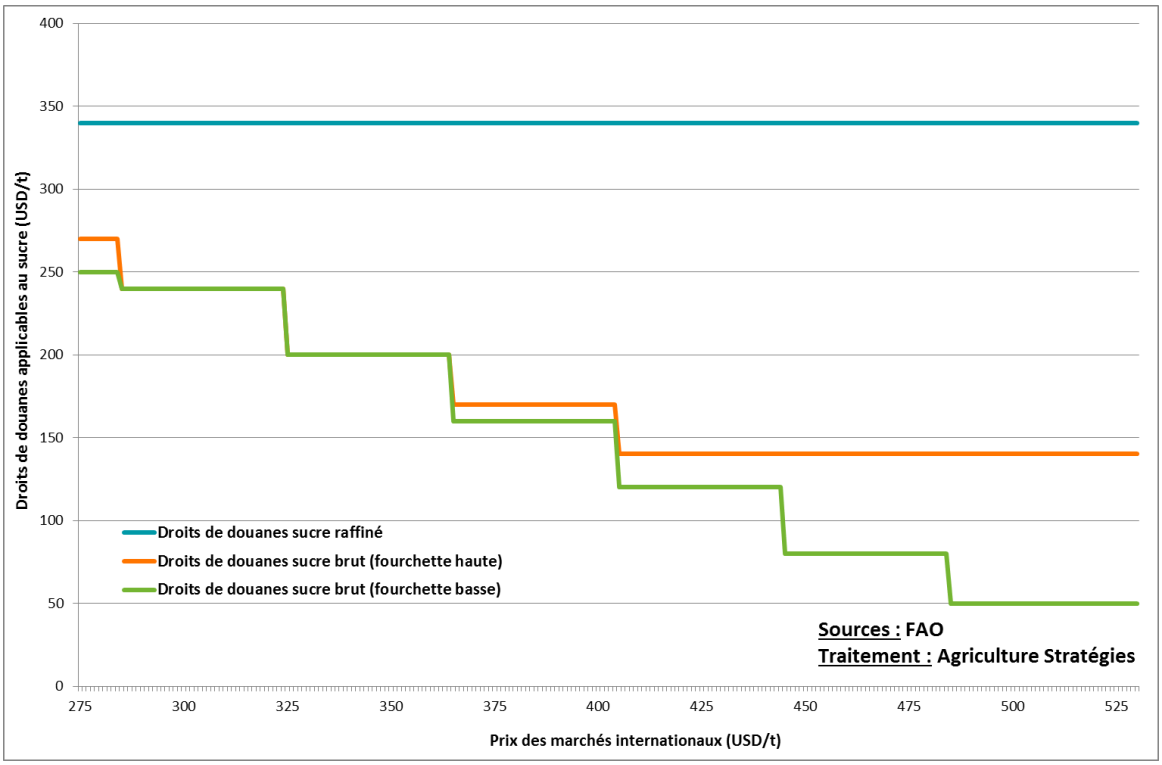

Figure 3: Variable customs tariffs for sugar entering Russian territory

During marketing periods (from 1 August and until stocks are considered low), tariffs range from $ 140 to $ 270 per tonne (high range). On the other hand, when imports are deemed necessary, a low range of between $ 50 and $ 250 per tonne is applied. Independent producers benefit directly from domestic price regulation because **sugar factories are required to buy sugar beet at a price equivalent to 8% of the final processed sugar price[6].**

Figure 4 below gives an overview of the mechanics of variable customs duties over the period 2011-2015 during which the international price fell (orange curve). Under the assumption that the low range of rates is applied from April, the price curve for raw sugar raised with customs duties is established (transport costs should also be taken into account). Knowing that the cost of refining sugar is between $ 80 and $ 100 / tonne, it is explained that **the domestic price of refined sugar in the Russian market is significantly higher than the international price.**

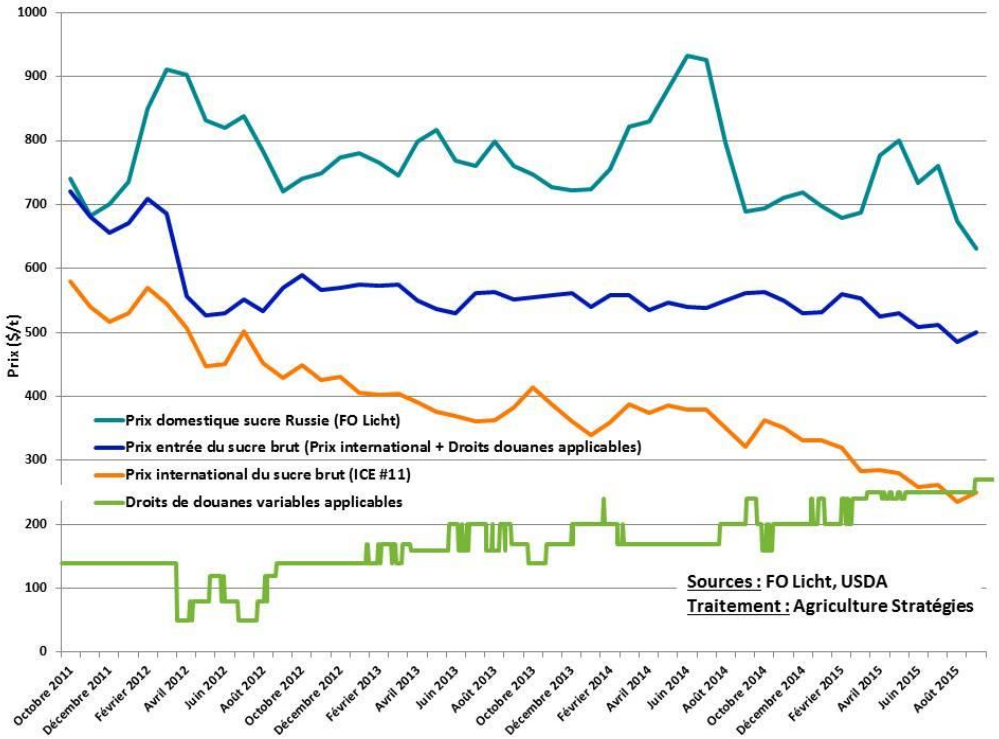

Figure 4: Sugar prices in Russia, entering the territory and the international market

In the end, it appears that Russia's sugar policy has boosted production to a record low in the early 2000s. Based on an import substitution strategy, changes may be coming as the Russian market is saturated. Given the Russian potential, it is not excluded that Russia will again become an exporter in the coming years.