Study N° SE 1501 -09

Indian sugar policy: Government role in production expansion, and transition from importer to exporter

Prepared by Antoine Meriot, Sugar Expertise LLC, for the American Sugar Alliance (ASA)

August 2016

Sugar Expertise, LLC - 9916 Derbyshire Lane Bethesda 20817 - Maryland USA

Email: sugarexpertise.am@gmail.com Mob.: +1 240 899 4859

TABLE OF CONTENTS

1. OVERVIEW Page 7

2. SUGAR PRODUCTION Page 7

2.1. Political organization

2.2. Food security context

2.3. Characteristics of sugar production in India

2.4. Transition from sugar importer to exporter

3. SUGAR POLICY Page 13

3.1. The main players for the sugar sector

3.2. Cane pricing: supporting sugarcane supply

3.3. The sugar mill sector

3.4. Sugar trade policy

4. NON-DIRECT SUPPORT Page 26

4.1. Export assistance scheme

4.2. Federal Scheme for Extending Financial Assistance to Sugar Undertakings

4.3. Scheme for extending soft loans

4.4. Evaluation of measures financed by the SDF (Federal)

5. DIVERSIFICATION OF SUGARCANE PRODUCTION USES Page 29

5.1. Ethanol production

5.2. Cogeneration (bagasse)

CONCLUSION Page 33

ANNEX Page 34

LIST OF ABBREVIATIONS

CACP: Commission for Agricultural Costs and Prices

CCEA: Cabinet Committee on Economic Affairs

CFI: Consolidated Fund of India

DFIA: Duty Free Import Authorization

DGFT: Directorate General of Foreign Trade

EBP: Ethanol Blended Petrol

EXIM: Export Import policy

FRP: Fair and Remunerative Price

GOI: Government of India

ICAR: Indian Council of Agricultural Research

ISO: International Sugar Organization

ISMA: Indian Sugar Mills Association

MIEQ: Minimum Indicative Export Quotas

MSP: Minimum Support Price

MW: Megawatts

NAPCC: National action Plan on Climate Change

OGL: Open General License

OMC: Oil Marketing Company

PDS: Public Distribution System

Rs: Rupees (Indian)

SAP: State Advised Price

SEFASU: Scheme for Extending Financial Assistance to Sugar Undertakings

SDF: Sugar Development Fund

SMP: Statutory Minimum Price

WTO: World Trade Organisation

EXECUTIVE SUMMARY

India is the second most populated country in the world. It has always struggled for food security and sugar is considered an important commodity under the Essential Commodities Act of 1955, which allows the Government of India (GOI) to intervene and regulate the sugar sector.

According to the Department of Food & Public Distribution, the "Indian sugar industry impacts rural livelihoods of about 60 million sugarcane farmers, and 600,000 workers directly employed in the sugar factories." Sugarcane is cultivated on 12.5 million acres, produced primarily in 11 States and delivered to 530 operating mills.

The sugar model of India's sugar industry is very specific with a huge internal sugar market (24.0 million metric tons) and sugar production dedicated to covering the needs of the domestic market. Sugar production in India is not very competitive with a tremendous number of small growers (less than 0.5 acre), with relatively low cane yields (28 mt/acre compared with 33 mt/acre in the USA), numerous small mills (50,000 tons of sugar by mill on average), with relatively short duration of sugar campaign (125-130 days) and high cost of production (20-24 cts/lb).

The Indian government support for its sugar industry is structured around 3 main pillars:

1. **Sugarcane Subsidy**. The GOI controls the sugarcane supply with a policy of high prices for cane ($42/mt compared with $31/mt of cane on average in the USA in 2014/15), regardless of the price of sugar on the domestic market. The minimum cane price mandate is costly for the millers and counterproductive as it encourages growers to ignore sugar market signals. It is considered as the main reason for the creation of arrears (payments owed to the cane growers by the millers, unable to pay high Government-fixed cane prices).

   If one compares the actual Indian cane payment system with the one recommended to reform the Indian sugar policy (a revenue sharing system on a 70/30 basis), one estimates that cane growers are receiving, for example, for the 2015/16 campaign, revenues $1.125 billion greater than actual sugar market prices would provide. Similar benefits have accrued in past years, with variations depending on market prices and exchange rates. The estimated price-support benefit on 2014/15 was $1.598 billion.

   Plus, over the past few years, the GOI has increased cane prices at nearly double the rate of increases for wheat and rice and provided generous soft-loan programs in order to help the millers to pay the high government-set prices for cane. These different programs of soft loans (2007, 2014 and 2015, totalling $4.6 billion) have

provided interest forgiveness for a total amount of about $440 million over the last nine years.

2. **Sugar Supply Regulation**. Control and regulation of the domestic sugar market, is organized mainly through the following elements:
   - Exports: Indian authorities have been quite creative in supporting exports, indirectly for example, by taking on the cost of transportation for sugar exported (2002 and 2007) with $206 million total expenditures, or directly with recent schemes of export subsidies (2013/14 and 2014/15) for which about $62 million were disbursed over two years, for 1.15 million tonnes of raw sugar exported under this scheme. This year the GOI is also providing $173 million in incentives to export surplus sugar or convert it to ethanol.
   - Buffer stocks: When exporting is not economically viable, the GOI dedicates funds to the "building and maintenance" of stocks – estimated at $134 million from 2007/08 to 2014/15.
   - Import tariffs: The GOI provides tariff protection when there is a glut on the domestic market, as has been the case over these last six sugar campaigns, with import duties rising this year from 25% to 40%.

3. **Support for Modernization and Diversification**. To assist the sugar sector, the GOI is encouraging millers to:
   - Modernize sugar mills with investment to increase crushing capacities: $246.8 million of loans granted by the GOI with interest rate forgiveness (2007/08-2015/16);
   - Develop sugarcane production (research, etc.): $91 million (2007/08-2015/16);
   - Diversify by encouraging investments in ethanol production and in co-generation projects from bagasse: $493 million of loans granted by the GOI's Sugar Development Fund (SDF) (2007/08-2015/16) and ethanol excise tax exemptions, valued in 2015/16 at about $195 million.

Most of these supports have been financed through the Consolidation Fund of India (Cess fund) funding the Sugar Development Fund that has provided $1.8 billion since 1982 for industry rehabilitation and research.

The GOI also intervenes through large purchases of sugar from the market in order to provide it at a low price to the poor. Expenditures on this program in 2012 and 2013 totalled approximately $1.5 billion for the two years.

Taken together, these ongoing direct and indirect subsidies, including the value of soft loans and the measures to raise prices for growers, have provided an average annual value to the Indian sugar industry of approximately $1.7 billion in recent years. See the summary table below, which includes subsidy amounts for the most recent years for which data are available. Given the Indian government's commitment to its sugar industry, these, or similar programs, are likely to remain in place.

One can affirm that the federal support, especially the successive programs of soft loans to reduce arrears and repay the farmers, have had a profound effect on India's conversion from a cyclical importer/exporter to a more consistent exporter, albeit with the aid of export subsidies.

As the world's second largest sugar producer, India is a country where sugar production fluctuations have a significant impact on the world sugar market. According to ISO statistics, India exported globally 11.0 million tons of sugar during 2010-2014. This was a significant swing for a country that it in 2009 had been a net importer of more than 4 million tons.

One can firmly state that this transition has had negative consequences on sugar prices on the world sugar market. The Indian sugar policy generates a vicious cycle of expenditures but the GOI will not hesitate to intervene and support its industry if necessary, even if it involves costly subsidies and controversial export support.

Summary Table

Government Subsidies and their Estimated Value to India's Sugar Industry			
Subsidy	Period	Total Amount	Annual Average
		--Million dollars--	
Help millers pay arrears to growers			
Value of interest forgiveness on soft loans [1/]	2007-15	450	50.0
Export subsidies			
Direct	2014-15	62	31.0
Indirect (cane subsidy) [2/]	2015/16	173	173.0
Buffer stock building & maintenance	2008-15	134	16.8
Soft loans			
Modernization	2008-16	247	27.4
Research & development (cane)	2008-16	91	10.1
Ethanol & co-generation	2008-15	493	61.6
Diversification			
Ethanol excise tax exemption [3/]	2015/16	195	195.0
Estimated value to growers from Federal & State-set cane prices [4/]	2015/16	1,125	1,125.0
Total			**1,689.9**

[1/] Total value of soft loans provided during 2007-15: $4.63 billion.
[2/] Subsidy to encourage sugar exports & cane ethanol production: $173 million = budgeted amount for 2015/16. Indirect export subsidies (cost of transportation) during 2004-13 totaled $206 million.
[3/] Estimated Government cost in 2015/16.
[4/] Premium to growers' returns if they just received 70% of actual sugar market prices, as proposed for policy reform. Similar benefits accrued in previous years; estimated benefit in 2014/15 was $1.6 billion.

1. OVERVIEW

India is a country with a population of more than 1.3 billion people and where the food security issue is highly political and under the influence of a socialist philosophy. The Federal Government is committed to supporting and protecting the poorest. It is, by definition and by necessity, one of the most highly regulated sugar industries throughout the world.

The world's largest sugar consumer and the second largest producer, India was long an important swing factor in international sugar trade, with a regular and cyclical alternation of deficits and surpluses.

Over the last six sugar campaigns, things have changed with India becoming a regular and steady exporter on the world sugar market, and the size of its production -- surplus or deficit -- positions India as a major player on the world sugar market.

2. SUGAR PRODUCTION

2.1. Political organization

India is the largest democracy in the world with an electorate of 814 million. The Indian political system is a complex construct dating from India's independence from Britain in 1947.

The Constitution of India (1950) states that "India is a sovereign, socialist, secular, democratic republic". It is important to outline these facts for the comprehensive analysis of its sugar policy, as it influences deeply its philosophy.

It is a federation of States. Federalism defines the power sharing between the Federal Government and the States.

2.2. Food security context

In 1955, the Indian Parliament passed "The Essential Commodities Act that regulates the control of the production, supply and distribution, and trade and commerce, in certain commodities, in the interest of the general public." Sugar is one of these commodities and is still today under the influence of this basic text of law.

Since its independence, India has been hit by serious famines and regular shortages of food. Providing food for the poor is an important issue in India, where food security does not mean only unavailability of food but also lack of proper nutritious foods. It is a paramount issue for the Government and its politicians, and there is definitely a will, from both the Federal Government and State Governments, to get involved in sugar activities.

2.3. Characteristics of sugar production in India

The sugar sector is an essential part of Indian agriculture and more widely of the national economy. The Department of Food & Public Distribution (Ministry of Consumer Affairs, Food & Public Distribution) states that the Indian "sugar industry impacts rural livelihoods of about 60 million sugarcane farmers, and 600,000 workers directly employed in the sugar factories." Sugarcane is being cultivated on 12.5 million acres of cane (5 million ha), produced primarily in 11 states and delivered to 530 operating sugar mills[1].

One of the major characteristics of Indian cane sugar production is the existence of artisanal sugar production. There was traditionally in India a large artisanal (non centrifugal) production of sugar (Gur and Khandsari) in the past (70's, 80's). This production has been declining over the years, from more than 50% to 16%, nowadays. It still represents 48-50 million tons of cane (the equivalent of roughly 5 million tons of sugar).

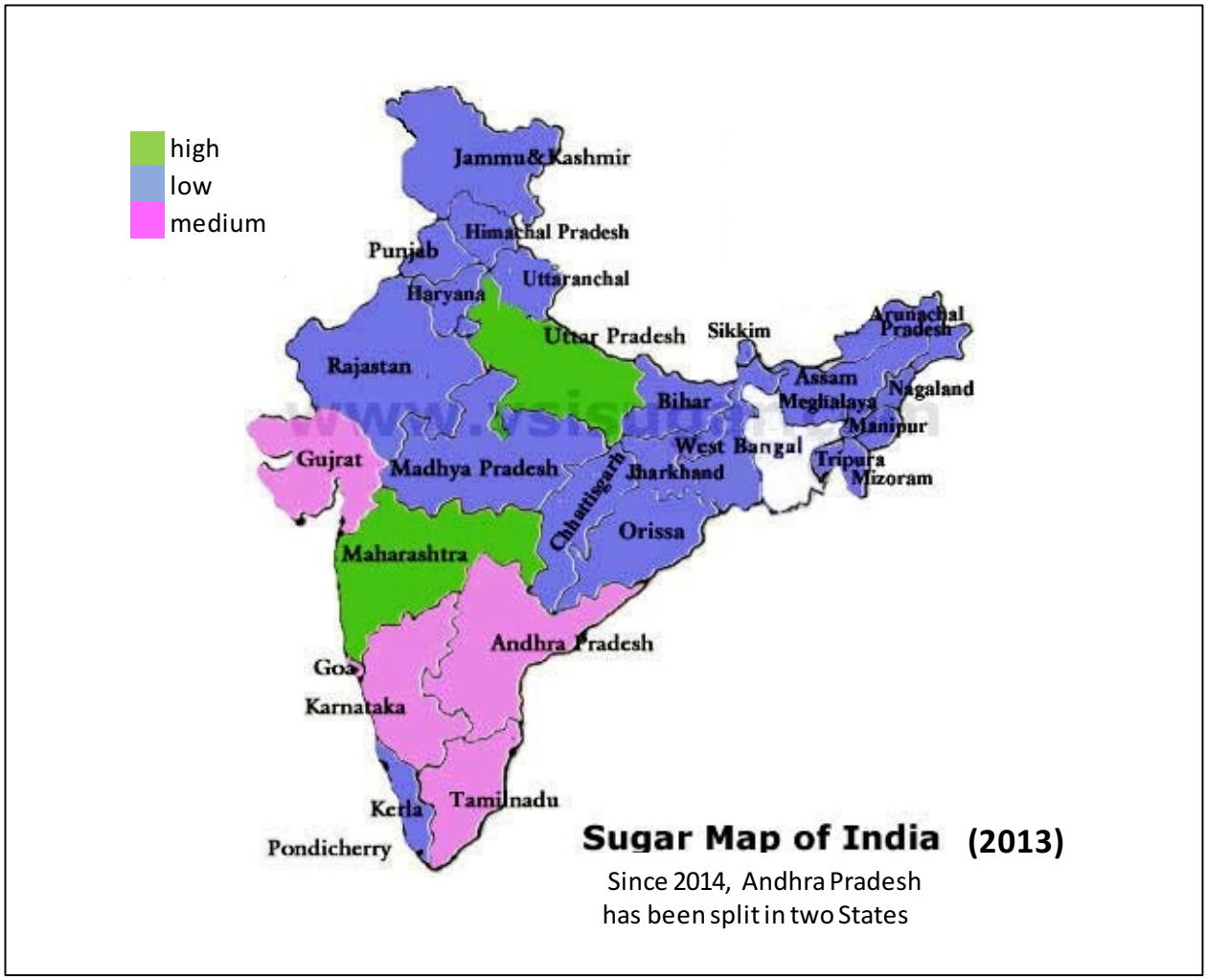
Sugar is produced in two main areas, the Northern part (Uttar Pradhesh, Bihar, Haryana, Uttarakhand, Punjab) with subtropical conditions, and the Southern part (Maharashtra, Karnataka, Tamil Nadu, Gujarat, Andhra Pradesh, Madhya Pradesh), with tropical ones.

India is a big sugar producer worldwide, but not considered a competitive one, with quite low yields in the fields (28 mt of cane/acre) and at the factory (2.85 mt of sugar/acre). In the United States, for example, cane yields average about 33 mt per acre and sugar about 4 mt per acre.

The cane price fixed by the Government is a guarantee for farmers of having a regular and important crop of sugarcane, but it is also a constraint as it increases the cost of production for millers for one ton of sugar produced (20-24 cts/lb).

[1] Indian Sugar Millers Association (ISMA) (2016)

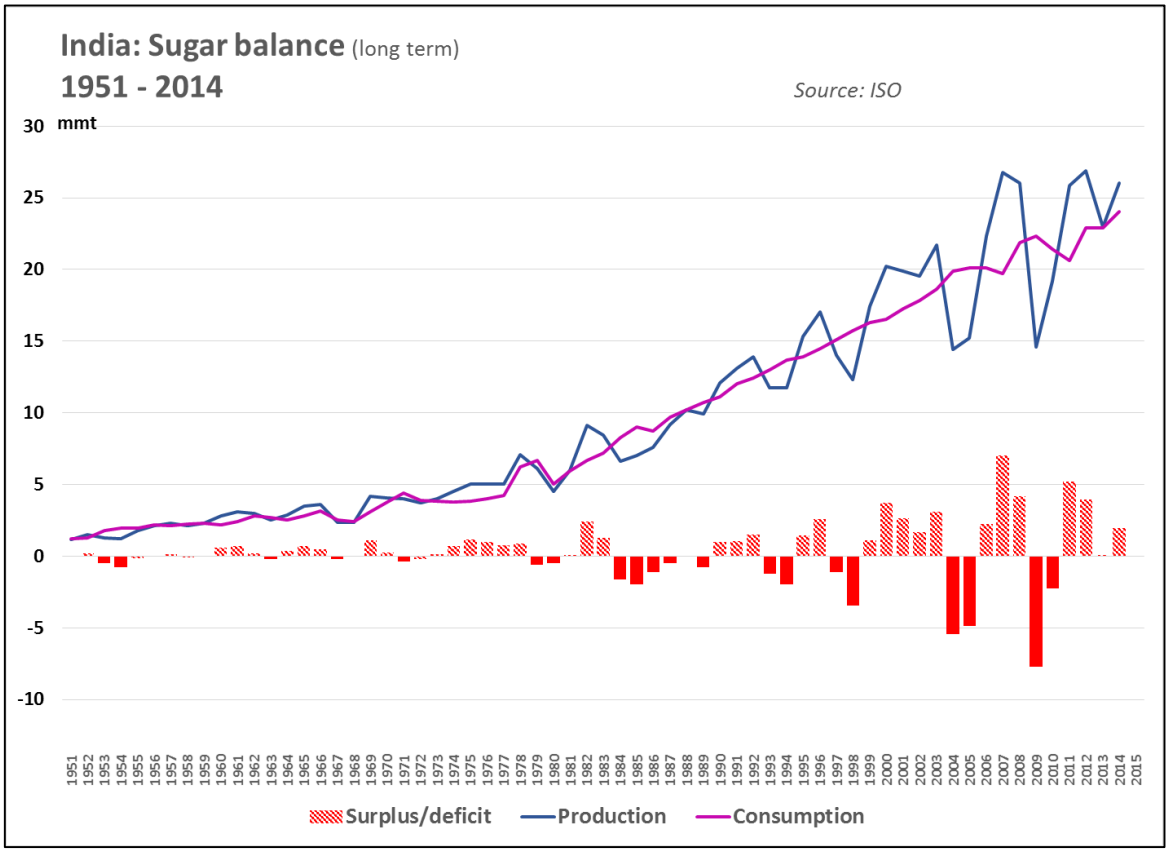
Figure 1. Sugar producing States of India (*Source: Vsisugar*)



The Northern part of India produces 33% of the sugar production and the Southern states account for 67% of Indian sugar output.

In both regions, there is a lack of water for growing sugarcane and drought can severely harm the crops and drastically reduce the yields and production. Availability of water is a limiting factor in India for cane, as well as for many other crops. In terms of performance, cane yields are better in the southern part of the country (32.8 mt/acre), than in the northern part (24.1 mt/acre), representing 55% of the total area cultivated with cane in India. At the all-India level, the level of agricultural performance for cane is lower than most of the competitive countries.

Figure 2. Sugar balance



Until the end of the 2000's, Indian sugar production was characterized by pronounced cycles, swinging regularly from surpluses to deficits, and over relatively short periods of time. It was notoriously referred to as the "Indian cycle".

Sugar production around the world is, by definition, cyclical and irregular, as sugar is produced in more than 100 countries, from different raw materials and within various agro climatic conditions. In India, the question of cyclicality has been exacerbated by the fact that there is no link between cane prices and domestic sugar prices, nor any link with sugar demand. The official incentive policy of high sugarcane prices increased sugar production, often beyond the internal needs, weighing on the internal market.

During overproduction periods, sugar prices logically went down, thus reducing the profitability of sugar factories as they had to pay a fixed price to growers for their sugarcane, regardless of the price the mills received for their sugar. When mills could not pay farmers, it created a situation known as "arrears," which are simply payments owed to the cane growers by the cane millers.

Then the vicious cycle was launched. High arrears meant unsatisfied farmers, willing to shift from cane to other crops. The direct consequence was a significant fall in cane cultivation for the next crop, pushing up sugar prices, allowing arrears to be paid, and restoring growers' interest in raising sugarcane.

Things have changed since the beginning of the current decade and we are going to explore how it happened.

2.4. Transition from sugar importer to exporter

Figure 3. Imports, exports and stocks of sugar

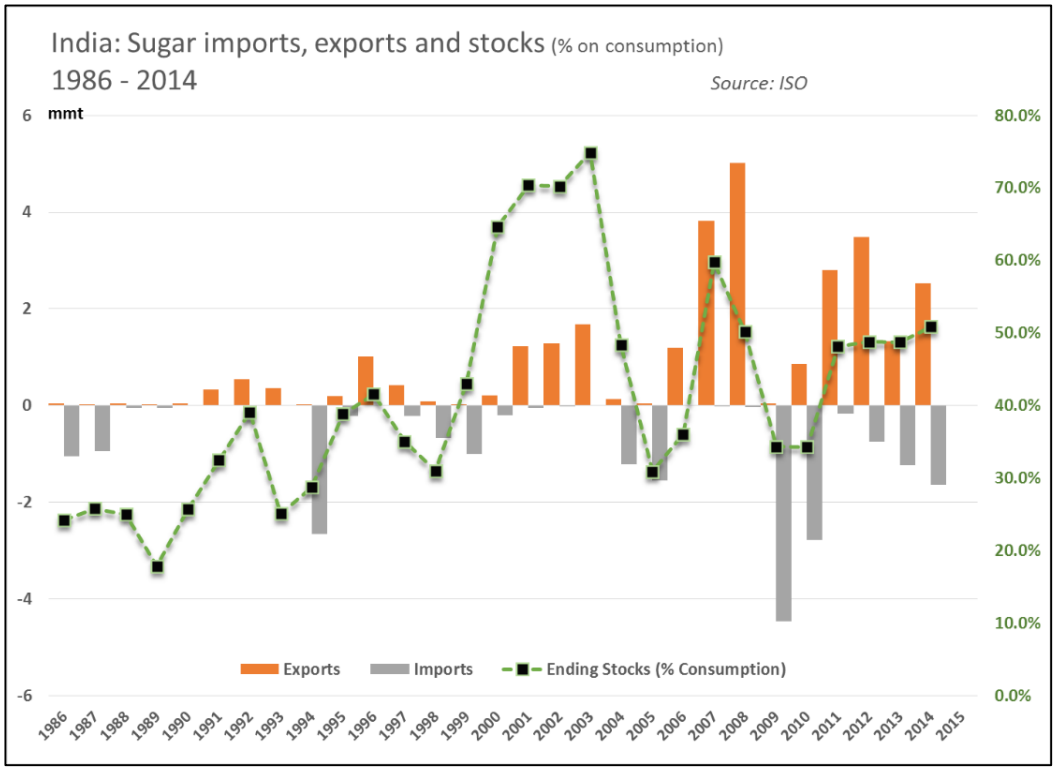


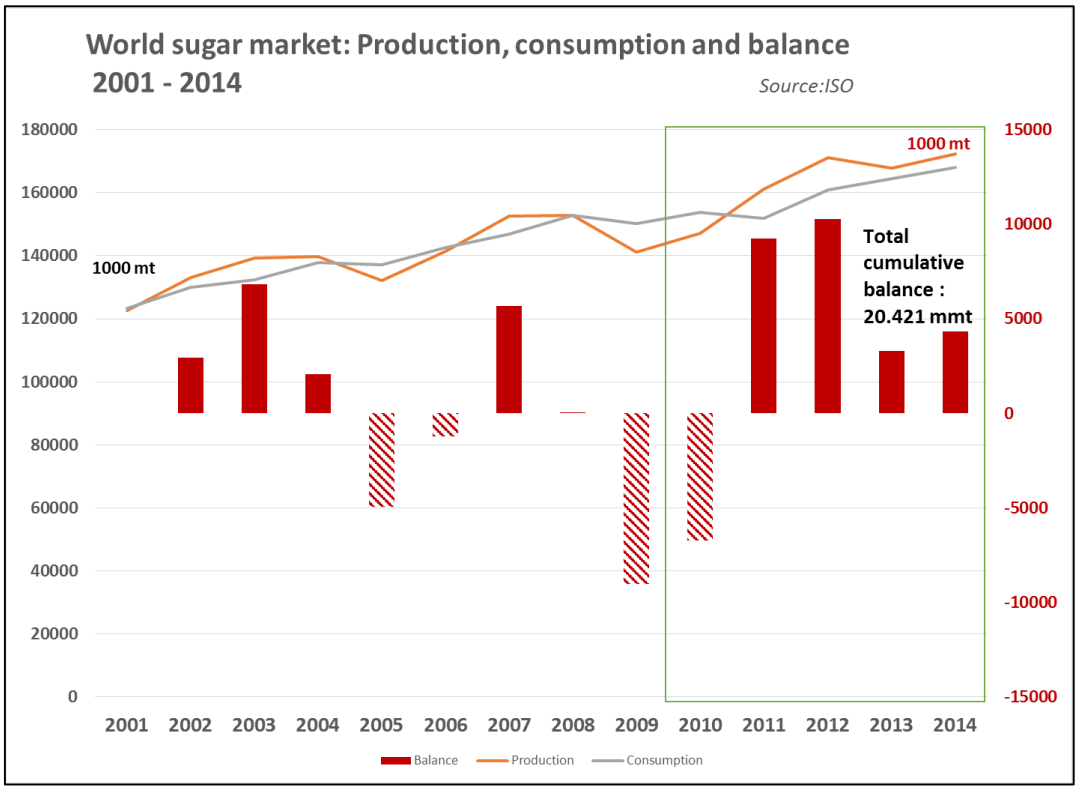
Figure 3 highlights the link between exports, imports and stocks. One can understand that when Indian sugar production is in surplus (1999-2003, 2006-2008, 2011-2014) the stocks of sugar increase (in volume and percentage), weighing on the domestic price, and leading the authorities to subsidize exports, to relieve pressure on the domestic market.

On the other hand, when production is not sufficient to meet internal needs, Indian authorities dig into the stocks and import sugar from the world market to satisfy domestic demand and to rebuild stocks.

The GOI uses sugar trade as a market management tool to control sugar prices on the domestic market and provide sugar for the greatest number of consumers at reasonable prices.

During the 2012-15 period of falling world and Indian domestic prices, when millers were having trouble paying high government-set sugarcane prices to growers, government subsidies helped the millers repay arrears. Soft loan programs backed by the GOI allowed the farmers to be paid. Thus, growers continued to plant cane, Indian sugar millers continued to produce sugar, sugar stocks grew, and India became a regular exporter. The export subsidy schemes implemented in India since 2003, under different forms, reduced stocks and avoided the cyclical trap of farmers responding to the low cane prices by reducing cane cultivation.

Figure 4. World sugar surpluses and deficits



During the period of surpluses on the world sugar market (20.4 million tons of sugar cumulated between 2010 and 2014), India recorded 9 million tons of surpluses and 11 million tons of exports. It was a period of collapse for sugar prices, and one can state that the surpluses of sugar in India played a paramount role in the world price decline.

3. SUGAR POLICY

Sugar is defined as an essential commodity under "The Essential Commodities Act" of 1955 and the Government of India, through this legislation, "can do whatever it deems useful or necessary for:

- maintaining or increasing supplies of any essential commodity;
- securing their equitable distribution and availability at fair prices;
- securing any 'essential commodity' for the defense of India or the efficient conduct of military operations;

and it may by order, provide for regulating or prohibiting the production, supply and distribution thereof and trade and commerce."

Sugar production in India is a heavily regulated sector. The Government's priority is to ensure a basic ration of domestically-produced sugar at a low price for everyone. Historically, there was a will to ensure an annual ration of 5 kg (11 lbs) per person per year (levy sugar), that the mills had the obligation to sell to the public sector (Public Distribution System) at a subsidized price, below their cost of production. 10% of the sugar production was reserved for the PDS these last years, but it had been much higher in the past. For instance in the early 80's the "levy sugar" represented roughly 60% of the sugar produced.

- The Sugarcane (Control) Order, 1966

  Since 1966, the Sugarcane Order has regulated sugarcane policy, annually fixing a Fair and Remunerative Price (FRP) for sugarcane.

3.1. The main players for the sugar sector

- GOI (Government of India)

  - The Ministry of Consumer Affairs, Department of Food and Public Distribution, is in charge of many aspects: distribution of sugar to the Public Distribution System (PDS), soft loans, different programs to subsidize sugar production and distribution.

  - The Commission for Agricultural Costs and Prices (CACP) is a decentralized agency of the Ministry of Agriculture and Farmers Welfare since 1965 that calculates the Federal fair and remunerative sugarcane price (FRP).

  - The Cabinet Committee on Economic Affairs (CCEA) is chaired by the Prime Minister and approves the sugarcane FRP the sugar mills must pay to growers for the coming sugar season.

- The Sugar Development Fund (SDF) was enacted in 1982 to allow the Federal Government to fund for research, extension and technological improvements in the sugar sector, and also, since 2008, to fund debt restructuring and distribution of soft loans to sugar mills.

  The SDF is funded by the Cess (Sugar Act Cess, 1982) through the federal budget which collects a levy on millers of $3.9/mt of sugar produced (Rs 240/mt), that is paid into the CFI (Consolidated Fund of India) and transferred to the SDF in order to finance all its actions and measures. The amount of the levy from the Cess varies annually with sugar production but the estimated annual amount is in the range of $100-110 million, that will be used to support sugar activity through different programs.

  The GOI has collected through the Cess (over the 1982/83-2014/15 period) more than $1.3 billion (Rs 82.2 billion) from millers to fund the SDF and finance the sugar industry. Of this amount, $1.1 billion (from 1982 to 2015) has been distributed through loans and grants to rehabilitate the sugar industry, develop sugarcane and more generally any research project aimed at the promotion and development of any aspect of the sugar industry.

- The Indian Council of Agricultural Research (ICAR) is an autonomous body responsible for coordinating agricultural education and research in India. It reports to the Department of Agricultural Research and Education, Ministry of Agriculture.

- State Governments

  State Governments set cane prices (SAPs) that are generally 30-50% higher than the federal cane price (FRP). They are generally supportive of the overly high cane prices, for political reasons.

- Indian Sugar Millers Association (ISMA)

  Established in 1932, the ISMA is the interface between the industry and Government on matters relating to sugar policy, statistics on production, sales, exports/ imports, prices, etc. ISMA is an association that brings together sugar mills (essentially private) and which is recognized by both the Federal and State Governments as the central apex organization to voice sugar industry concerns.

3.2. Cane pricing: supporting sugarcane supply

The first important feature of the Indian sugar policy is the price of sugarcane. It has to be sufficiently attractive to motivate the farmers to grow cane and ensure the sugar mills that they will have sufficient cane to crush.

- **The cane price system**: the process of establishing a price for sugar cane is organized through a "dual price scheme." with the Federal Government on one hand (FRP), and the State Government on the other (SAP):

  1) The Federal Fair and Remunerative Price (FRP):

  The FRP is a guaranteed price to cane growers. It was introduced for the 2009/10 sugar campaign and set a basic price for cane (on a 9.5 % recovery standard) taking into account:

  - cost of production of sugarcane;
  - return to the growers from alternative crops and the general trend in other commodity prices;
  - availability of sugar to consumers at a fair price;
  - price at which sugar produced from sugarcane is sold by sugar millers;
  - recovery of sugar from sugarcane;
  - proceeds from the sale of by-products, molasses, bagasse and press mud (filter cake) or their imputed value;
  - reasonable margins for the growers of sugarcane to cover risk and profits.

The GOI (Federal Government) announces the FRP annually, after having taken the advice of the CACP, within the framework of consultations with State governments and professional bodies. And it is the responsibility of the millers to buy all the cane provided by the growers at this price ($42/mt (Rs 2,800/mt)for cane in 2014/15).

In 2013, a Committee (the "Rangarajan Committee Report"), appointed by the GOI with the objective of reforming Indian sugar policy, recommended, among other things, establishing a link between the sugarcane price and the price of sugar on the domestic market. The lack of a link has been a major issue within the system, which exacerbated natural cyclicality and generated a regular unbalance between supply and demand on the Indian sugar market.

2) The SAP (State Advised Price)

The SAP is a second level of pricing for cane that is announced in most of cane-producing states. It is generally 30-35% higher than the FRP, and wherever a SAP is declared, it takes precedence over the FRP, irrespective of market prices.

State cane prices are generally announced in October-November but can be delayed a couple of weeks. The delays occur occasionally whenever there is no consensus over the sugarcane price: cane growers wanting to know early what the benefit will be for them and millers not wanting high prices that would squeeze their margins.

Note[2]: States are considering a recommendation for implementing the revenue sharing formula (70/30). So far, only the states of Karnataka and Maharashtra have passed State acts to implement it, with the FRP as a mandated price floor. But because of the depressed sugar prices on the market and high levels of FRP, mills were unable to afford even the FRP.

- **Sugarcane prices Vs. competing crop prices**

Table 1. Price history for sugarcane, rice and wheat *(2010/11-2014/15)*

		2010/11	2011/12	2012/13	2013/14	2014/15	Increase since 2010/11
Sugarcane (Federal FRP)	Rs/ton of cane	1,391	1,450	1,700	2,100	2,200	58.2%
Paddy rice (MSP)	Rs/Qtl	1,000	1,080	1,250	1,310	1,360	36.0%
Wheat (MSP)	Rs/Qtl	1,120	1,285	1,350	1,400	1,450	29.5%

Source: ISMA

In the context of depressed prices on the world sugar market, there is clearly an advantage given by the Federal authority for sugarcane in terms of a short-term guaranteed price. The increase over the last five seasons is much higher for cane (+58%) than for rice (+36%) or wheat (+29%). It is a strong signal for the farmers, made possible by the soft loan programs to help the millers pay these high guaranteed prices.

[2] Department of Food & Public Distribution

Figure 5. Sugarcane prices Vs cane area

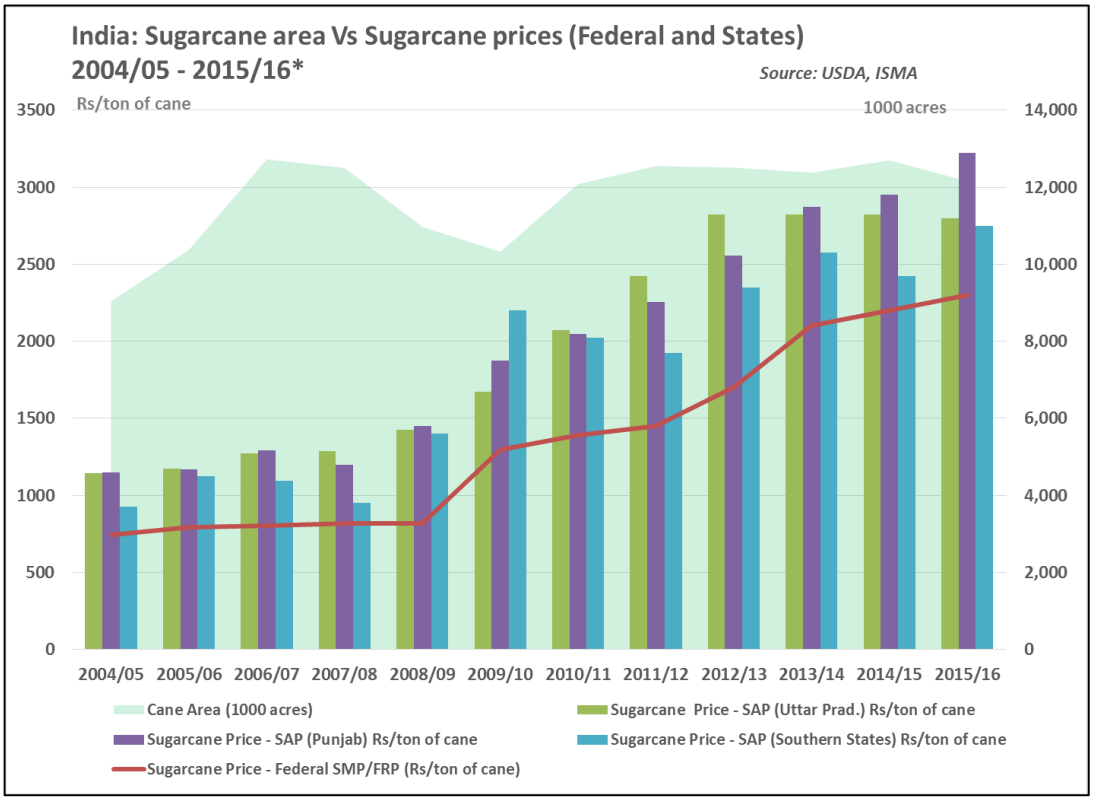


Figure 5 shows the relation between the increasing cane area and the regular and steady rise of government-set sugarcane prices, on both federal (FRP) and state (SAP) levels.

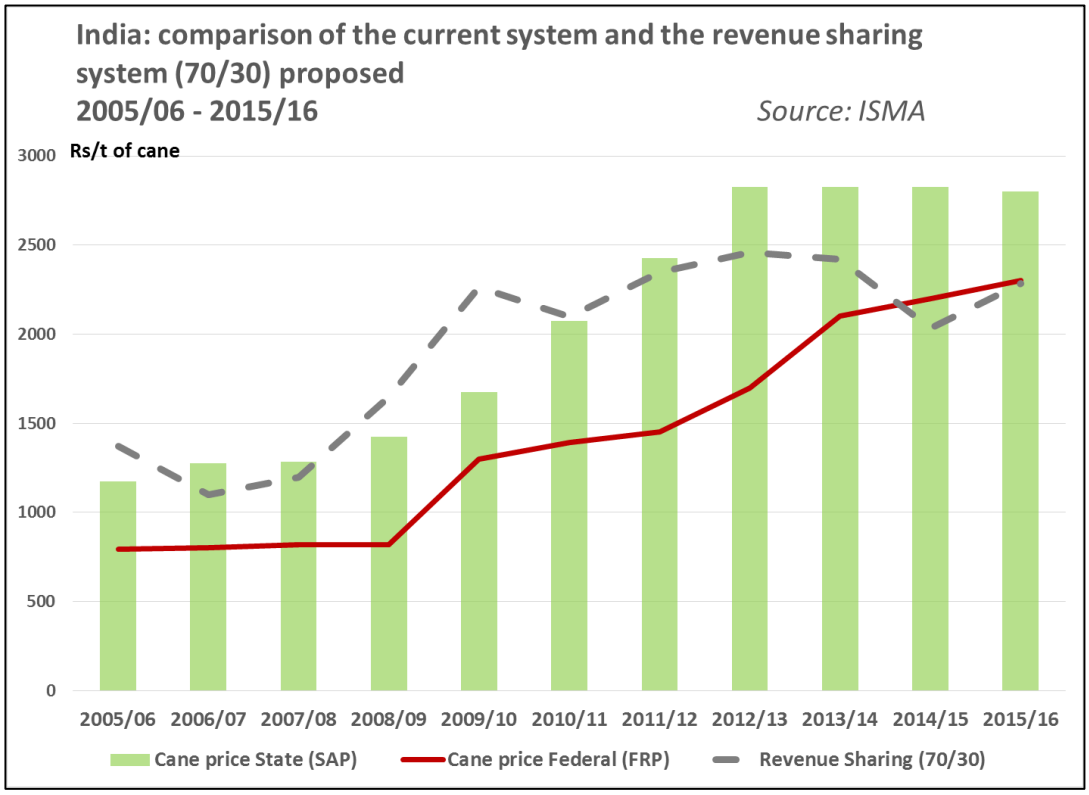
One can observe that there is always a premium given by the States over the basic and guaranteed price announced by the Federal Government (FRP). In the Southern States, the premium is always smaller, because cane growing is more competitive, with better yields and lower costs of production. In the Northern part (Uttar Pradesh, Punjab), on the contrary, the incentive is higher and the premium can reach 50% over the FRP.

Finally, this policy of high sugarcane prices has allowed the area under cane to stabilize at around 12 million acres (5 million hectares) since 2010/11, despite the drop in sugar prices on the world sugar market.

- **An incentive for cane growers**

As noted previously, the federally appointed Rangarajan Committee recommended changing the current system into a revenue sharing system on a 70/30 basis, meaning 70% of the revenue from sugar sales goes to the growers and 30% to the millers, as in Thailand.

Figure 6. Illustration of the current cane pricing system advantage



The Committee sought to address the problem that the cane price to growers is calculated regardless the evolution of the sugar price for millers. The revenue sharing system proposed by the Committee bases the calculation of cane prices on a fixed share of the market value of the sugar produced from the cane.

In Figure 6 one can see that:

- The current formula with the SAP price is more attractive for the growers over the last five campaigns.

- Over the last four campaigns, the sharing revenue formula (70/30) would have yielded a much lower price for the cane delivered than the SAP, taking into account the drop in the domestic market price,

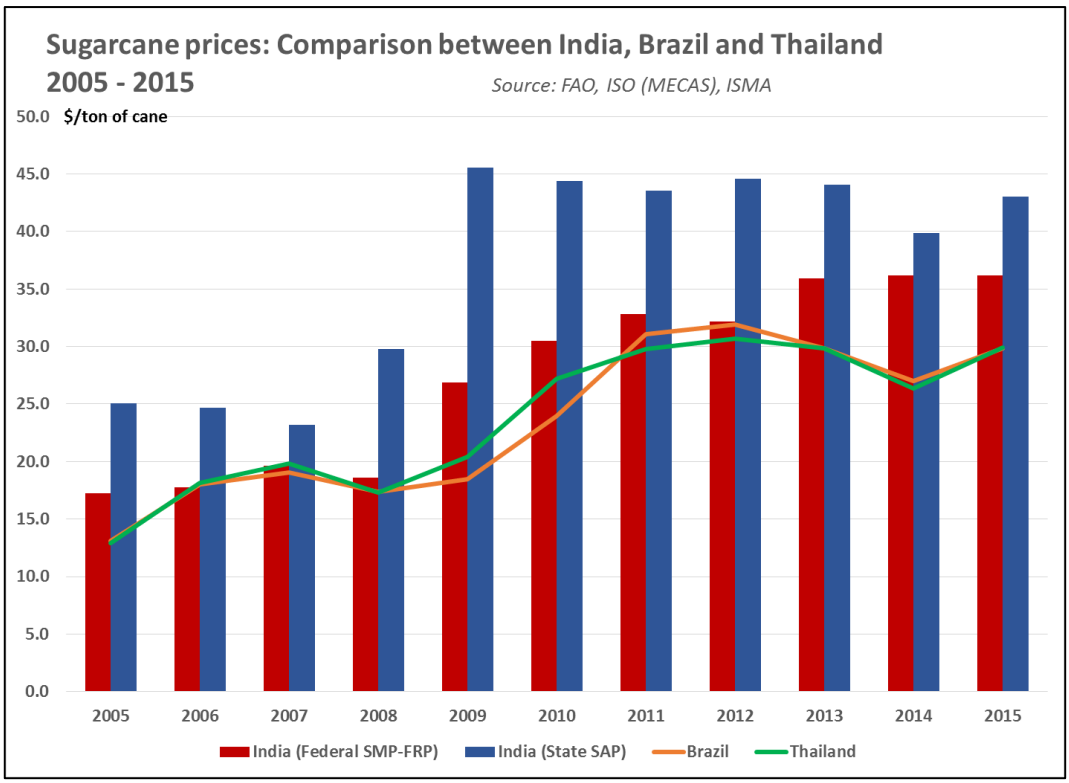
- Over the last two campaigns, the 70/30 formula would have provided a price very close to the basic federal price, the FRP.

If one compares for 2015/16 the actual Indian cane payment system (SAP = Rs 2,800/mt In Northern States) with the revenue sharing system on a 70/30 basis (cane price = Rs 2,500/mt), there is a difference of roughly Rs 300/mt (i.e., $4.50/mt of cane). If one multiplies this advantage by the total tonnage of cane produced in India for sugar production (about 250 million tons), one estimates that cane growers are receiving revenues $1.125 billion greater than actual sugar market prices would provide. The revenue benefit in 2014/15 was $1.598 billion.

- **A policy of high sugarcane prices**

So the GOI sugar policy is to ensure the millions of cane growers that they will obtain high guaranteed prices to grow cane in sufficient quantities to feed the sugar mills and to provide sugar to the people of India, at good prices.

Figure 7. International comparison of sugarcane prices



A comparison with cane prices in the largest exporting countries, Brazil and Thailand, shows that over the ten last years, sugarcane prices in India have been consistently higher, a reflection of India's high cost of production and need for substantial subsidization.

Figure 7 also highlights that levels of prices in India are generally higher than the two main competitors on the world sugar market. It clearly indicates the political will in India (Federal and State Governments) to keep cane prices high. By comparison, U.S. cane prices averaged $31/mt in 2014/15, well below India's and similar to Brazil's and Thailand's.

3.3. The sugar mill sector

- **Cane area determination and cane procurement** (Federal and State)

The Federal Sugarcane (Control) Order,1966 (6), requires that cane growers sell their cane to a specified mill and the mill is obliged to buy this cane at the guaranteed price (FRP or SAP).

The Federal Government has transferred to State Governments the "power to regulate distribution and movement of sugarcane." The cane areas are generally allotted to sugar mills by each State government, based on the crushing capacity of the mills, potential area under sugarcane, and availability of cane. The idea behind this philosophy is to avoid speculation on cane procurement and uncertainty for both millers and cane growers.

Note: The administrative control of cane supply does not allow direct contacts for negotiation between growers and millers, and hinders the emergence of a competitive market. This is one of the points highlighted by the Rangarajan Committee, but the policy remains today.

- **Minimum mill distance criteria** (Federal and State)

Within the same federal Sugarcane Order (6-A), it is specified that "no new sugar factory shall be set up within the radius of 9.3 miles (15 km) of any existing sugar factory" (new, or operating in the State or two or more States). Meanwhile, the State government may notify (with prior approval of the Federal Government) such minimal distance longer than 9.3 miles (15 km), but not less than this distance. In case of Maharashtra, Punjab and Haryana, the distance has been increased to 15.5 miles (25 km).

- **Sugar marketing** (State)

Before the (partial) deregulation of the Indian sugar policy that occurred in 2013, the price of sugar on the internal market was controlled by the government with the release of sugar through periodic quotas allocated to the mills. Under this scheme:

- 90% of sugar produced was intended for the open market ("free market"), but the release mechanism ruled how much sugar the millers were able to sell within a specified period (quarterly, then semi-annually);
- 10% was reserved for India's poor through the "levy sugar" at below-market prices with the PDS (Public Distribution System).

Since 2013 the distribution of sugar on the market has changed. Federal and State Government still set cane prices, but the millers no longer sell a part of their sugar output directly to the PDS. The State government purchases sugar from the open market and then supplies the sugar at a lower price, $203/mt (Rs13,500/mt)) to the poor people through the PDS. The GOI directly supports the burden of the difference between the market price ($481/mt (Rs 32,000 /mt,)) and the subsidized price by means of a fixed subsidy of $278/mt (Rs 18,500 /mt) allocated to the State Government. For the 2013 year, the burden for the GOI was $981 million (against $481 million in 2012, before the change to the new system).

- **Interstate trade of by-products** (State)

There are many restrictions regarding the trade or exchange between States of sugar by-products in India, such as molasses and bagasse. The idea behind these constraints is to limit trade to avoid speculation on prices of these products. For molasses for instance, State Governments fix quotas for different end uses and imposes restrictions regarding movement or trade across state borders.

For the use of bagasse to produce electricity and eventually sell power, some States have imposed restrictions on the mills to avoid speculation.

Note: The Committee favoured free movement and the abandonment of end-use base-allocation quotas currently still in action in many States. The liberalization did not touch this point of the regulation and it is still pending today.

- **Jute packaging materials** (Federal)

This is another example of the omnipresence of the GOI in the Indian sugar industry and related activities, as there is a political will to control the bagging of sugar. The Jute Packaging Materials Act, 1987, rules that sugar be packed only in jute bags.

Note: The Committee also recommended the removal of this regulation, explaining that it imposes technical constraints that have also an additional cost for the industry. It has been relaxed further, as only 20% of production is to be mandatorily packed in jute bags.

3.4. Sugar trade policy

The GOI claims the right "to control production, supply and distribution, of sugar as an essential commodity."

So the Federal Government regulates sugar trade (raw and refined sugars) through:

- sugar allocation for export with export release orders (that can be waived off when necessary);
- import tariffs, varying with world sugar market prices and domestic needs;

- export subsidies (direct or indirect) to facilitate the removal of surpluses when necessary.

Indian authorities use trade policy (exports and imports) as a market management tool to stabilize the sugar market. The phenomenon has been exacerbated by the abandonment of the release mechanism (2013) that regulated the internal demand and avoided huge price movements. In other words, export and import policy is guided by domestic availability.

Over the last six campaigns, India has been dealing with sugar surpluses, and the challenge is currently how to reduce the pressure linked to the glut on the domestic market. There are several options regarding domestic sugar surpluses, but the first one is exporting and the second one is building stocks when exporting is not economically appealing.

Diversification of cane production is actually another option in India where the authorities encourage ethanol production. It will be studied in section 5 of the study.

- **Exports**

Indian sugar millers have been active these last four campaigns on the international sugar market, because they produced large sugar surpluses (9 million tons cumulated from 2010 to 2014) and have been acting to ease the pressure on their domestic market by exporting those surpluses or building stocks. They exported significant amounts, roughly 11 million tons over the last 5 years, and helped depress world sugar prices. But even in that context, they did not export as much sugar as they would have liked to, with export subsidy programs that were not sufficient to reach the goals the Government had, especially over the last two sugar campaigns.

- Export scheme

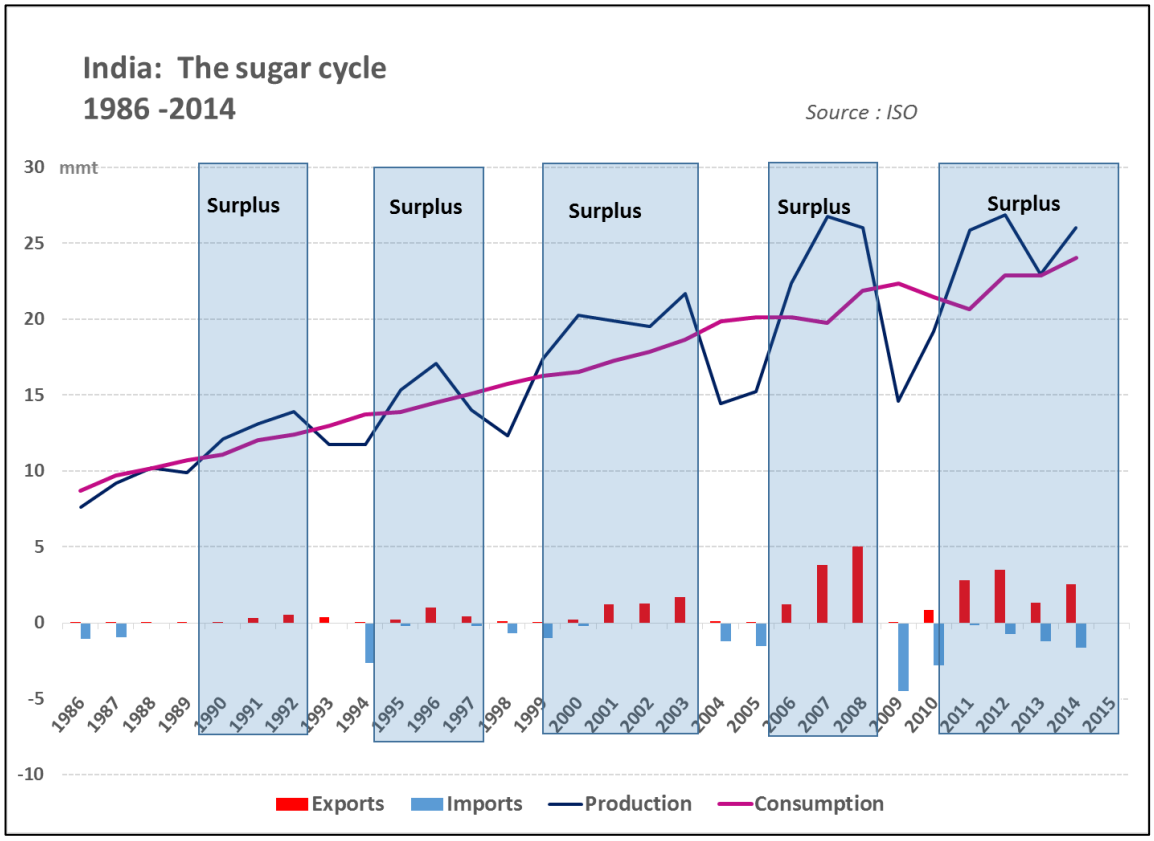
The Indian Export-Import Policy (EXIM Policy) is organized within the framework of the Foreign Trade (Development and Regulation) Act, 1992, which determines the measures for export promotion.

The general Federal scheme for sugar exports is organized under the Open General License (OGL) with the allocation of release orders to control and monitor the quantities of sugar that will be exported. The GOI wants to control sugar prices and trade, knowing that in periods of deficit the Government wants to give priority to satisfying internal needs, claiming the right to restrict exports and favor imports if necessary.

Since 2012, the export of sugar has been unrestricted, and the prior registration of quantities that was requested by the DGFT (Directorate General of Foreign Trade) before,

has been waived off, to expedite sugar export sales and ease the pressure on the domestic market.

Figure 8. Succession of surpluses and deficits



- Export subsidies

During 2010/11 and 2011/12, sugar prices on the world sugar market spiked above 30 cents per pound and it was economically worthwhile during this period for India to export its surpluses. Following the price spike, many sugar-producing countries boosted production and prices fell to the10-11 cts/lb range.

During the steady drop of sugar prices in 2013 and 2014, Indian sugar exporters faced a situation where the world market prices were falling faster than domestic prices and it became less profitable to export to the world market.

In February 2014, the authorities introduced an export subsidy ($54/mt (Rs 3,330/mt) of sugar exported) for 4 mmt of raw sugar. As world sugar prices fell, the GOI extended this export subsidy scheme to the end of 2015.

In 2013/14, though the GOI objective was to export 4 million tonnes of raw sugar, 725,000 mt of raw sugar were actually exported through the export subsidy program. (Total estimated value of subsidy: $30-36 million (Rs1.8-2.2 billion)

For the 2014/15 campaign, the export subsidy program was confirmed, with a subsidy of ($ 63/mt (Rs 4,000 /mt) of raw sugar exported with an allocation of 1.4 mmt of raw sugar. About 425,000 tonnes of raw sugar were exported under this scheme with an estimated amount of subsidy around $26 million (Rs1.7 billion). This program ended in September 2015.

Following criticism from other sugar-producing countries around the world within a global context of depressed prices and large surpluses, the GOI abandoned the export subsidy program (November 2015). Under the program, India exported 1.15 mmt, a significant quantity and a major factor in further depressing world sugar prices, but well below the 5.4 mmt planned over the two campaigns (4.0 + 1.4 mmt).

- Minimum Indicative Export Quotas (MIEQ) for 2015/16

The MIEQ is a compulsory export program of 4 mmt of sugar (all grades) without the direct export subsidy scheme or any incentive. It was introduced in November 2015, for 2015/16. The Government fixed indicative export targets for each mill proportionate to its sugar production so as to dispose of 4 million tonnes of sugar stocks. According to the Department of Food and Public Distribution, "the industry is expected to export at prevailing international prices and absorb the losses so incurred. It is expected that with stock evacuation, domestic sugar prices would increase and reach levels more supportive of cane prices."

The ISMA officials stated clearly at the beginning of 2016 that the Indian sugar industry will be a regular net exporter and will export about 10% of its sugar production on the world market.

- The new sugarcane production subsidy (2015/16)

The GOI announced (12/02/2015) a new measure for sugarcane, a subsidy of 45.0 Rs/ton of cane ($0.68/mt) of cane crushed (starting October 1, 2015) to be paid to the cane growers by the millers, with two conditions for the millers to qualify for this subsidy:

(1) Achieve 80% of their allocation for sugar exports (3.2 mmt);
(2) Achieve 80% of their ethanol production target.

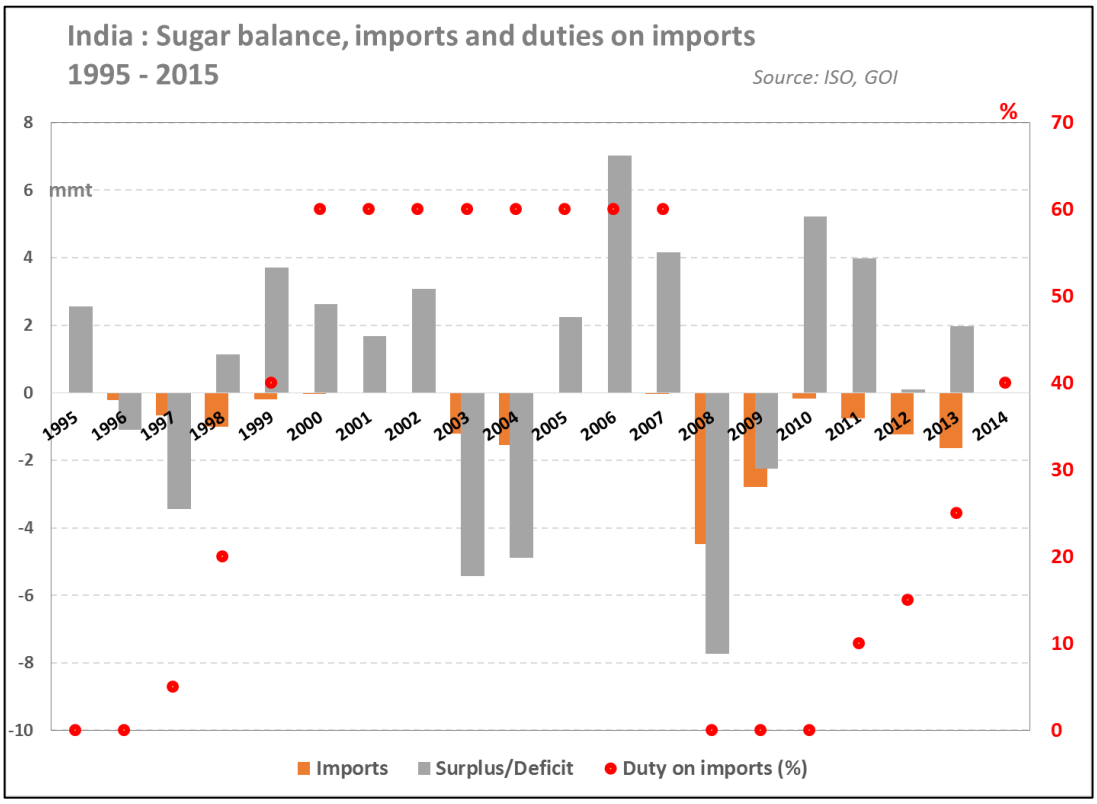
The Government supports its growers but by conditioning the grant to the satisfaction of targets in terms of sugar export and diversification, through ethanol production. It is a different approach than the controversial export subsidy program, but the aim stays the same: boost exports in a situation of overproduction. It is definitely an indirect sugar export subsidy.

The SDF has budgeted about $173 million for this export subsidy in 2015/16.

- **Imports**

Imports of sugar in India are cyclical and correspond to periods of deficit on the domestic market (see Figure 8). Imports satisfy the need to rebuild stocks, as sugar buffer stocks serve as a reserve to feed the market when local production is not sufficient to cover internal needs.

Figure 9. Sugar balance, imports and duties on imports



Several things can be stated about Figure 9:

- First of all, when the Indian sugar market is in surplus, duties are high to discourage imports. The GOI controls imports under the Open General license (OGL) and import volumes vary from one year to another one, after assessing domestic market needs.

- With the exception of 2003 and 2004, when the country was in a deficit situation (1996, 1997, 2008, 2009), duties have been reduced to zero, to be able to import and rebuild stocks.

- During the surplus period since 2010, some imports have been permitted. The GOI has allowed imports of raw sugar under a program, the "Duty Free Import Authorization" (DFIA), that allowed exporters to import raw sugar duty free if they plan to refine and re-export it. This program has recently been withdrawn to avoid speculation and leakage onto the internal market.

- The 2015 import duty level was fixed at 40%.

4. NON-DIRECT SUPPORT

4.1. Export assistance schemes (2002 and 2007)

- 2002-2004: There was a first generation of export assistance scheme implemented between 2002 and 2004, with the purpose of reimbursing the expenditures for internal transport and freight charges, also covering the ocean freight charges of the sugar factories that exported.
  (1) Ocean freight charges: $7.7/mt (Rs350/mt) of sugar exported by sea after February 2003;
  (2) Handling and marketing charges: $11/mt (Rs500/mt) of sugar exported after October 2003.

- 2007-2008: The scheme of financial assistance (subsidy) was adopted in 2007 in order to "enable sugar mills to pay the cane price to sugarcane farmers" by covering payment of charges (transport, freight, handling and marketing) through a flat rate subsidy for:
  (1) $32.7/mt (Rs1,350/mt) of sugar exported for sugar mills in coastal states;
  (2) $35.2/mt (Rs1,450/mt) of sugar exported for sugar mills non-coastal).

According to the 2015/16 budget of the Department of Food & Public Distribution, GOI expenditures on these programs to subsidize Indian sugar exports from 2003/04 to 2012/13 (over the 10 year period), totalled $206.3 million (Rs 9.532 billion).

These programs have not been financed since 2013/14, as other schemes have since been implemented.

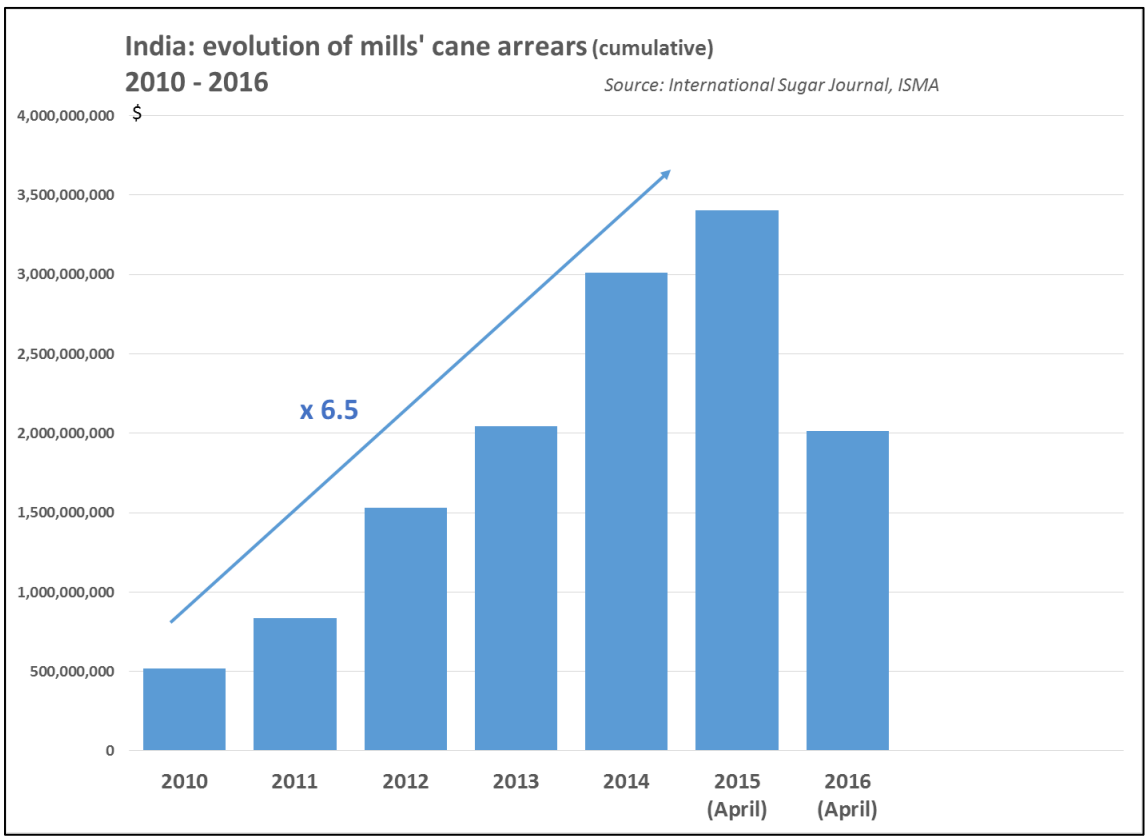
4.2. Federal Scheme for Extending Financial Assistance to Sugar Undertakings (SEFASU 2007 and 2014)

- In December 2007, the GOI issued its official notification for providing financial assistance to sugar mills to improve their liquidity position. This program was aimed at enabling all sugar units operational during the past two years (2006/07 and 2007/08) to clear their SMP related arrears on cane prices to farmers. Full interest subsidy was

provided for the total duration of the loan (4 years + 2-year moratorium), with an interest forgiveness limited to 12% (of which 7% met from the Federal Budget and the remaining 5% from the SDF).

- In January 2014, as world and domestic sugar prices were dropping, and as the millers' arrears to growers were increasing steadily (more than sextupled between 2010 and 2015, from $520.6 million to $3.404 billion), the GOI launched a new program of assistance for the 2013/14 campaign with "a view to improve the liquidity position of the sugar factories for enabling them to clear cane price arrears of previous seasons."

Figure 10. Recent history of cane price arrears (cumulative)



The program provides interest forgiveness (up to 12% interest rate charged by the bank) on 5-year loans for sugar millers to help them to clear cane price arrears with their growers under certain conditions. The GOI covers the cost of interest on the loans if the repayment of the loan (principal) is regular.

4.3. Scheme for extending soft loans (June 2015)

The soft-loan scheme announced during the 2014/15 sugar campaign was designed to help millers meet their payments to farmers for the previous year (arrears) and for 2014/15.

The amount of the soft loans made available for 2014/15 was equivalent to $949 million (2.5 million of tonnes of sugar at Rs 24,000/mt = Rs 60 billion) and the mills that had cleared at least 50% of the cane price payable on the basis of the FRP for 2014/15 by June 30, 2015, were eligible for the loan.

The GOI bears an interest burden of up to 10% charged by the commercial banks on these loans, for a maximum period of one year. The expenditure on interest forgiveness is entirely met by the GOI's Sugar Development Fund[3].

According to the Department of Food & Public Distribution[4], the total amount of the soft loans guaranteed were $2.6 billion (Rs 108 billion) in 2007, $1.081 billion (Rs 66 billion) in 2013/14 and $949 million in 2014/15. The soft-loan total for the three programs is $4.63 billion. The interest burden assumed by the Federal Government is estimated by the GOI at about $440 million for those three programs of soft loans.

4.4. Evaluation of measures financed by the SDF (Federal)

Table 2. Detail of expenditures under the SDF (2007/08 – 2015/16)

	Detailed expenditures	2007/08 - 2015/16
		US$
1	Administration of Sugar Development Fund	18,379,027
2	Modernization of sugar mills	246,816,720
3	Sugar mills for cane development	90,937,720
4	Sugar factories for bagasse based cogen projects	393,113,598
5	Sugar factories for production of ethanol, anhydrous	100,678,446
6	Grant-in-aid for development of sugar Industry	576,625
7	Subsidy for building & maintenance of buffer stock	134,433,559
8	Reimbursement of internal transport & freight*	175,716,823
9	SEFASU (2007)	139,336,378
10	SEFASU (2014)	105,920,679
11	Soft loan (2015)	15,001,500
	Total	**1,420,911,074**

*Reimbursement of internal and external transport & freight costs: $206.3 million from 2003/04 to 2015/16

Source: Ministry of Food and Public Distribution (compiled expenditures through January 2016)

Notes: See Annex description of the different schemes.

[3] Notification No 1(5)/2015-S.P.-I. Ministry of Consumers Affairs, Food and Public Distribution (06/23/2015)
[4] Annual report 2014/15 (Chapter VI-6.28)

Interventions of the SDF regarding sugar activity are concentrated between several schemes:

- Loans (modernization of sugar mills, cane development, bagasse-based cogeneration projects, and ethanol projects);
- Subsidies for buffer stocks (encourage the millers to stock sugar);
- Subsidies for reimbursement of transport costs when exporting;
- Subsidies for reimbursement of arrears (SEFASU 2007, 2014) + soft loans (2015).

The amount of expenditures (2007/08-2015/16) of the GOI through the SDF is at $1.42 billion ($158 million annually on average) for very different schemes, but they all have the same purpose, to help the Indian sugar industry to survive, despite their relative inefficiency, during periods of low prices.

5. DIVERSIFICATION OF SUGARCANE PRODUCTION USES

Like other sugar-producing countries, India has been figuring out how to survive during the periods of low sugar prices. And more generally, Indian authorities have understood that sustainability of its industry also depends on its capability to diversify its production activities and its revenue sources.

5.1. Ethanol production

- **Historical background**

The Government of India examined, beginning in 2000, the viability of blending ethanol with petrol (gasoline), through three pilot projects (in Maharashtra and in Uttar Pradesh). All of them were successful and in 2003 the GOI launched its Ethanol Blended Petrol (EBP) program, at a 5% blending rate in vehicles.

Ethanol production was limited to certain territories (9 states) for logistical and financial reasons, as the GOI recommended blending of ethanol with petrol at supply locations of oil companies.

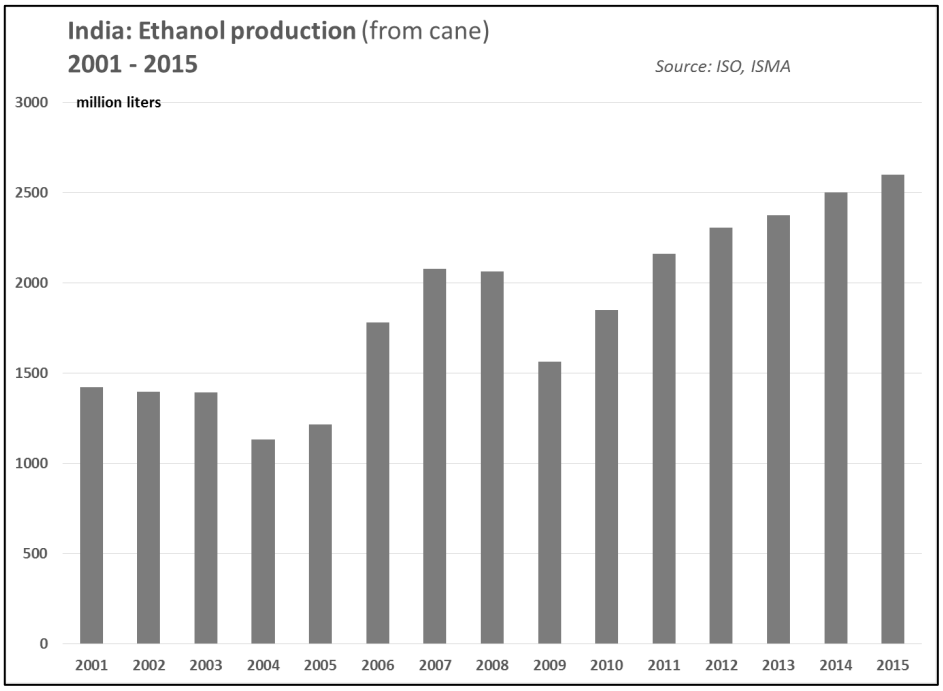
In 2007, the EBP program was extended throughout the country except for a few regions and made mandatory with a fixed procurement price.

At the end of 2012, the CCEA (Cabinet Committee on Economic Affairs) required that 5% will become mandatory and was to be implemented across the country, effective 2013.

In December 2014, the GOI announced a price-fixing scheme for fuel ethanol procurement by the state Oil Marketing Company (OMC), within a range of $0.72-

$0.74/liter (5% higher than previous prices). This was in order to reassure ethanol producers of a future in biofuel production, in a general context of oil price decline and large uncertainties regarding biofuel profitability.

Figure 11. Ethanol production (cane)



On April 2015, the GOI also decided to remove the excise duty on ethanol production (12.6%) to boost production for two reasons:

- to push a policy of energy independence and
- to find a solution for the glut of sugar on the Indian market.

The EBP represents an estimated support for the millers of $0.075/liter of ethanol produced (Rs5/liter). According to the USDA Report (IN5079), "the excise duty exemption will be applicable for ethanol produced from molasses generated during the next sugar season 2015/16 and supplied for blending with gasoline." Assuming 2.6 billion liters of ethanol produced by the industry for blending (from 250 million tons of cane), this amounts to a total subsidy of about $195 million for the 2015/16 campaign.

- **The characteristics of ethanol in India**

Ethanol in India is primarily produced from a by-product (molasses), and not from sugar juices, which limits the production potential. In Brazil for instance, sugar millers hedge between producing sugar and ethanol, depending on the relative profitability of one to another.

In reality, the outcome of ethanol production and expansion has been disappointing, as the current blending of ethanol with petrol has always been lower (1.5-2%) than the targeted 5%. It is clearly and logically the case when sugarcane production is low, but it is also true during periods of cane surpluses, but to a lesser extent. Recently, the government, confronted with the crisis on the sugar market, has brought the focus on ethanol blending by resolving pricing uncertainties around the biofuel and encouraging oil companies to procure more.

To conclude on ethanol production and diversification, one would say that until recently the ethanol option was only an attractive option in theory, but not in practice, as there were many impediments[5] that limited the development of ethanol production:

- Procedural difficulties regarding interstate transport of ethanol (non-issuance of export permits for example);
- Administrative delay to obtain necessary certificates for ethanol trade (no-objection certificate);
- Interstate charges;
- High excise duties on molasses: $11-$12/mt (Rs 750/mt) of molasses ;
- Excise duties on ethanol (12.36%).

Now, it seems the GOI has changed its approach and is seriously ready to take part in diversification and sustainable biofuel opportunity, as it has raised the blending target from 5 to 10%, with a roadmap to reach this objective.

If one considers the loans to develop ethanol projects ($100 million) and the value of the estimated excise duty exemption ($195 million), this represents an additional support of about $295 million for sugar mills to develop this production.

5.2. Cogeneration (bagasse)

Renewable energy became an important matter in India due to increasing energy demand. Already in 1993, Indian authorities were looking at how to promote and develop bagasse co-generation at sugar mills.

[5] USDA Gain report IN5079

In 2003, the GOI announced the Electricity Act, 2003 that mandates the States to promote electricity generation from renewable energy.

In 2008, India implemented the National Action Plan on Climate Change (NAPCC), to struggle actively against the global warming and climate change.

In 2015, about 530 mills were operating and producing sugar; 271 were generating electricity from co-generation installed in these factories. But according to a note published by the Journal of Mechanical and Civil Engineers (IOSR-JMCE) in January 2014, 50% of the potential of bagasse co-generation is not fulfilled.

Over the period[6] (2007/08 – 2015/16), the total amount of expenditures and loans accepted through the SDF for bagasse based cogeneration has been about $393 million.

The GOI has heavily supported diversification these last years, dedicating globally more than $493 million in soft loans to its ethanol and co-generation projects.

Table 3. Regional distribution of bagasse cogeneration utilities

Regional distribution - bagasse cogeneration		**2013**		
Regions	installed capacity MW	potential MW	% of utilization %	Number of projects
Subtropical zone (North)	**848**	**2,200**	38.53%	**67**
Uttar Pradhesh	711	1,250		53
Haryana	32	350		4
Bihar	43	300		4
Punjab	62	300		6
Tropical zone (South)	**1,475**	**2,800**	52.67%	**145**
Maharastra	581	1,250		65
Tamil Nadu	327	450		26
Karnataka	404	450		32
Andra P.	163	300		22
Gujarat	0	350		0
Uttarakand	**10**	**0**		**1**
Total	**2,332**	**5,000**	46.65%	**213**

Source: International Organization of Scientific Research (IOSR),"Bagasse Co-generation in India: Status, Barriers," January 2014

[6] Outcome Budget, Department of Food & Public Distribution (2007/08 – 2014/15)

The development of more co-generation in India is in the pipeline. The GOI announced that during the last Plan (2007-2012), 1,369.7 MW had been added from bagasse co-generation (more than the 1,200 MW officially planned).

However, there are still some impediments to a more rapid growth of energy production from bagasse:

- The average crushing capacity of an Indian sugar mill is low (3,700 tons of cane/day), and the capability of the boilers is conventional low pressure (32 or 42 bars).
- Co-generation implies upgrading the boilers to high pressure boilers and it is a costly investment for millers already struggling to survive with low sugar prices.
- In some regions, lack of grid connectivity is a limiting factor.

CONCLUSION

India is one of the major sugar producers in the world and will likely continue to play the role of a surplus producer. The high level of Federal and State Government support of the industry virtually ensures this. They have transitioned to a consistent exporter and will probably remain so, although they are not competitive (20-24 cts/lb) with recent levels of prices on the raw sugar world market (15-16 cts/lb).

The Indian sugar policy generates a vicious cycle of expenditures. The mechanism implemented by the Indian Government obliges the millers to pay high prices for cane, unsustainable economically, and requires the government to support, on one hand, the millers to pay these high Government-set cane prices due to the growers and, on the other hand, to export sugar surpluses, a direct consequence of this policy.

The current system regularly generates surpluses and costly intervention from the Indian authorities to support sugar stakeholders. This has included export subsidies that many countries believe are illegal under WTO rules. But it is the purpose of the Indian government to ensure that all the population has a sufficient food supply, and that the sugar industry receives the support necessary to provide revenues to millions of cane growers' families.

We estimate the value of Government subsidies to the Indian sugar industry to have averaged about $1.7 billion per year in recent years.

The GOI will not hesitate to continue to intervene and support its industry if necessary, even if it involves costly subsidies and controversial export support.

ANNEX

Brief regarding loans granted from the Federal SDF (Sugar Development Fund)[7]

Schemes:

1. **Modernization /Expansion**

- Purpose: for carrying out modernization of sugar factories;
- SDF loan: 40% of the project cost;
- Rate of interest: 2% per annum below the Bank rate on the date of release
- Moratorium: 5 years;
- Repayment: loan + interest recoverable in half yearly installments (not exceeding 10).

2. **Cane development**

- Purpose: for the development of sugarcane where the sugar factory is situated;
- SDF loan: maximum about $810,000;
- Rate of interest: 2% per annum below the Bank rate on the date of release;
- Moratorium: 3 years;
- Repayment: loan shall be repaid in equal yearly instalments (not exceeding 8) and the interest of loan shall be paid half yearly for the first three years.

3. **Co-generation projects**

- Purpose: to implement a project of bagasse-based power co-generation;
- SDF loan: 40% of the project cost (20% for green-field project);
- Rate of interest: 2% per annum below the Bank rate on the date of release
- Moratorium: 3 years;
- Repayment: loan shall be repaid in half yearly instalments (not exceeding ten).

4. **Ethanol**

- Purpose: for development of production of ethanol or anhydrous alcohol from molasses;
- SDF loan: 40% of the project cost (20% for green-field project);
- Rate of interest: 2% per annum below the Bank rate on the date of release;
- Moratorium: 1 year.
- Repayment: loans from the Fund along with the interest due thereon shall recover in half-yearly instalments (not exceeding eight).

[7] Department of Food & Public Distribution /Annual Report 2014/15 (Annexure –XVIII)