

Development and Diversification Strategies for the Sugar Industry: INDIA

Presentation

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Profile of Indian Sugar Industry

Production

INDIA: Second largest Cane Sugar Producer

2004 : Sugar Production 14.4 million tonnes
raw value (*Sugar Year Book, ISO 2004*)

2005-06: (October – September) Sugar Season
Estimated Production 22.80
million tonnes raw value (19.00
million tonnes)

Profile of Indian Sugar Industry

Consumption

INDIA: Largest Sugar Consumer

2004 : Consumption 19.9 million tonnes
raw value (*Sugar Year Book, ISO 2004*)

2005-06: Sugar Season:

Projected consumption 21.6
million tonnes raw value

Profile of Indian Sugar Industry

Imports

- ❖ Small Imports in recent years.
- ❖ 2004: 1.2 million tonnes raw sugar
(Sugar Year Book, ISO 2004)
- ❖ 2004-05 Sugar Season:
About 1 million tonnes of raw sugar

Profile of Indian Sugar Industry

Exports

- ❖ 2000: 2,01,660 tonnes raw value
- ❖ 2001: 1,219,904 tonnes raw value
- ❖ 2002: 1,287,684 tonnes raw value
- ❖ 2003: 1,677,809 tonnes raw value
- ❖ 2004: 132,948 tonnes raw value

(Sugar Year Book, ISO 2004)

Profile of Indian Sugar Industry

Exports

- ❖ **2005-06 Sugar season:**
Projected export: 1 million tonnes
- ❖ **2006-07 sugar season:** Exports are likely to increase substantially.

Profile of Indian Sugar Industry

Cane Area and Production

Year	Area <i>(million hectares)</i>	Production <i>(million tonnes)</i>
1999-2000	4.22	299.32
2000-2001	4.32	295.96
2001-2002	4.41	297.21
2002-2003	4.52	287.38
2003-2004	4.02	237.31
2004-2005	3.64	232.32
2005-2006	4.13	

Profile of Indian Sugar Industry

Average Cane Yield

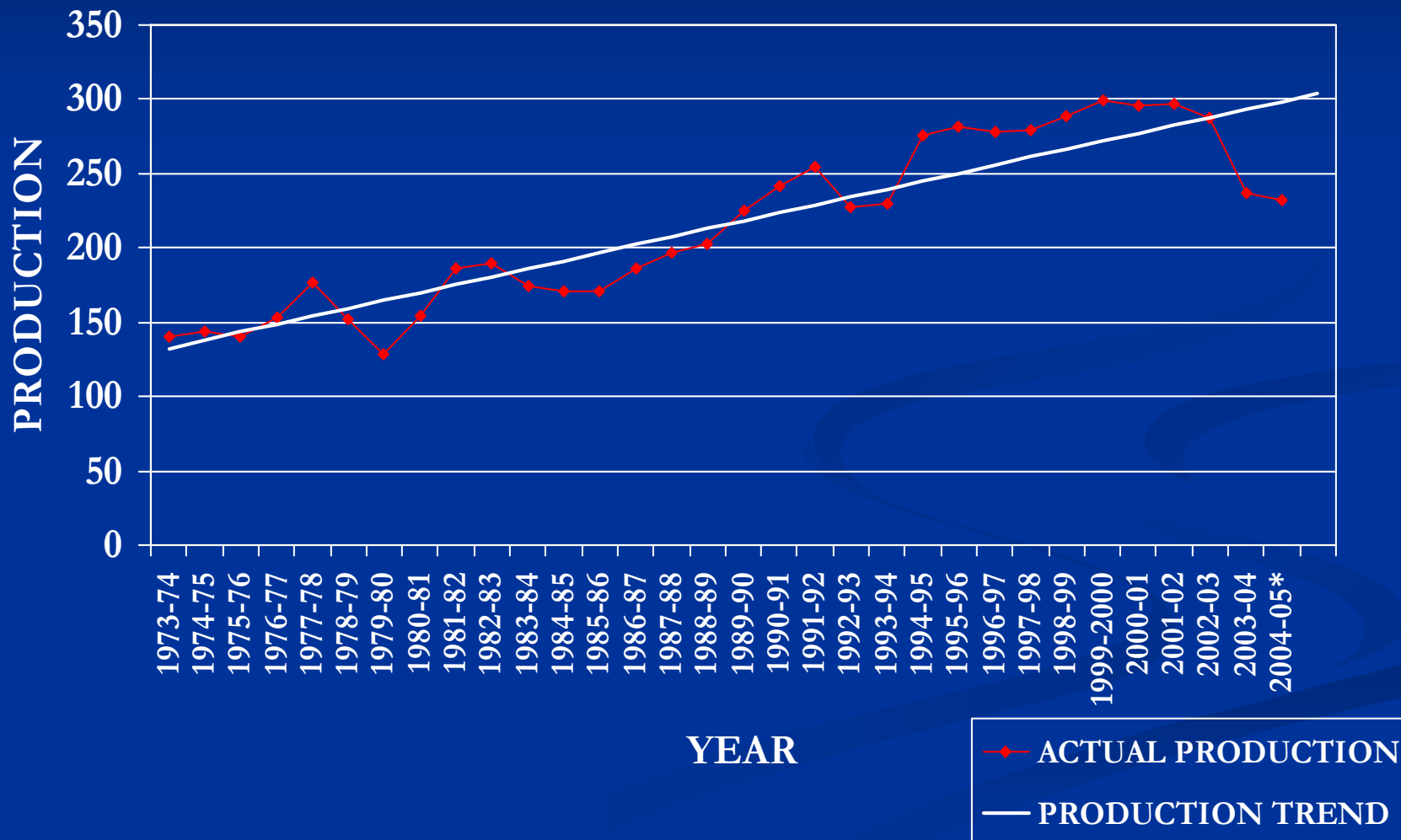
Year	Kg/Hectare
1999-2000	70,935
2000-2001	68,577
2001-2002	67,370
2002-2003	63,576
2003-2004	58,986
2004-2005	63,806

Variation in Cane Yield in Different Zones/States

- ❖ **Wide variation** - from over 100 tonnes per hectare in Tamil Nadu, 84 tonnes in Andhra Pradesh, 74 tonnes in Maharashtra, 56 tonnes in Uttar Pradesh.

Sugarcane – All India Production

Million tonnes



Sugar Mills

Installed Capacity:
(Position as on 31.3.2006)

		Installed Capacities (<i>million tonnes</i>)
Total No.	577	19.54
Private Sector	199	7.64
Coop. Sector	316	10.70
State owned	62	1.19

Average Sugar Recovery

Sugar Season	In Percent
1998-1999	9.86
1999-2000	10.20
2000-2001	10.48
2001-2002	10.27
2002-2003	10.38
2003-2004 (<i>Prov.</i>)	10.23

Diversification Strategies

Two Major initiatives taken since 2002:

- Cogeneration of power from bagasse
- Ethanol from molasses

Also:

- Bio-fertilizers

Cogeneration of Power from bagasse:

- ❖ Bagasse constitutes 30% to 33% of cane crushed.
- ❖ Estimated potential of bagasse based power generation : 5000 MW

Cogeneration of Power

- ❖ Thumb/rule: The MW capacity for optimal cogen is about 0.5% of the TCD capacity of plant with 65 kg. boiler.
- ❖ More and more sugar mills are now going in for 85 Kg. boiler and above as a result of the policy initiatives.

Plant Capacity and Power Generation

TCD	Total Power generation		Power required for process	Exportable Power	
	<i>65 Kg. boiler</i>	<i>85 kg. boiler</i>		<i>65 Kg. boiler</i>	<i>85 kg. boiler</i>
2500	10.2	14.3	3.6	6.6	10.7
4000	16.4	22.8	5.6	10.8	12
5000	20.5	28.8	6.8	13.7	14.9
6000	24.5	34.4	7.8	16.7	26.6
8000	32.7	45.8	10	22.7	35.8
10000	40.9	67.3	12.6	28.3	54.7

Source: NSI Kanpur

Policy Support

- ❖ In 2002, concessional financing of Sugar Mills for bagasse based cogeneration was provided for by amending Sugar Development Fund (SDF) Act.
- ❖ From the Sugar Development Fund (SDF)
 - 30% of the project cost granted as loan at concessional rate of interest, 4% per annum;
 - Minimum 10% contribution from promoters; and
 - Balance up to 60% as loan from Banks and financial institutions.

Present Position

- ❖ At the beginning of 2006:
 - 62 projects commissioned - 508 MW power
 - 40 projects under commissioning-405 MW power
- ❖ Projects Of 20 sugar mills under scrutiny with SDF - Power to be generated 248 MW.

Power Purchase Policy

- ❖ Cogenerated power is purchased mostly by the State Electricity Boards;
- ❖ Third party sales of power are also allowed;
- ❖ Rates are fixed by the State Governments;
- ❖ Rates vary from Rs.2.50 to 3.25 per unit;
- ❖ Cogeneration of power generates operating profits to the Sugar Mills.

Policy

- ❖ Ethanol to be produced only from molasses, not from primary cane juice;
- ❖ The quantity of molasses produced is to the extent of 4.2 to 4.5% on cane.

Average Production

- ❖ A 4000 TCD capacity plant with average working for 150 days in a year, cane produce about 180 tonnes of molasses per day;
- ❖ The distillery capacity will be 40 KLPD of rectified spirit (RS); and
- ❖ After removal of impurities and water etc., about 90% of the RS can be converted into ethanol.

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Average Production

Plant Capacity	Molasses	Distillery	Ethanol
4000 TCD	180 tonnes per day	40 KLPD of RS	36 KLPD
Duration : 150 days	27,000 tonnes per year	6000 Kilo litres per year	54000 Kilo liters per year

Ethanol Policy Support

- ❖ In 2002, the Sugar Development Fund Act was amended to provide for concessional funding to Sugar Mills for ethanol production; and
- ❖ The Sugar Development Fund Rules amended to fund for setting up of distilleries by Sugar Mills for production of ethanol.

Concessional Funding from SDF

- ❖ Loans are provided from the SDF at 4% rate of simple interest;
- ❖ Promoter's contribution : Minimum 10%
- ❖ SDF's contribution : Maximum 40%
- ❖ Balance contribution from Banks and Financial Institutions.

Present Position

- ❖ Six (06) Sugar Mills have been funded from the SDF for total capacity of 235 KLPD;
- ❖ Estimated project cost 910.8 million rupees;
- ❖ Total loans from the SDF : 338 million rupees; and
- ❖ Five (05) proposals under pipeline with estimated capacity of 300 KLPD-estimated project cost 850 million rupees.

Ethanol Blending/Purchase Policy:

- ❖ 5% blending of ethanol with petrol allowed in 9 States and 4 Union Territories.
- ❖ Further expansion to other States under consideration.
- ❖ In the second phase, 10% blending under consideration.
- ❖ Present rate: Rupees 18.75 per litre of ethanol ex-factory. In addition, Modified Value Added Tax (MODVAT) @ Rupees 3 per litre are allowed to producers.
- ❖ Ethanol revenues add to the profits of sugar mills.

Summing Up

- ❖ Sugar is the second largest agro-based industry in India;
- ❖ The cane pricing policy in India is sugarcane grower's friendly. With weather being favourable, there is scope of expansion of cane area, and larger cane production;

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Summing Up

- ❖ Research is being encouraged and funded for improving yield of sugarcane and recovery of sugar;
- ❖ Experiments are under way for sugar beet cultivation; and
- ❖ Indian sugar industry is in a resurgent phase.

THANK YOU