INDIAN SUGAR

GLOBAL SUGAR ALLIANCE

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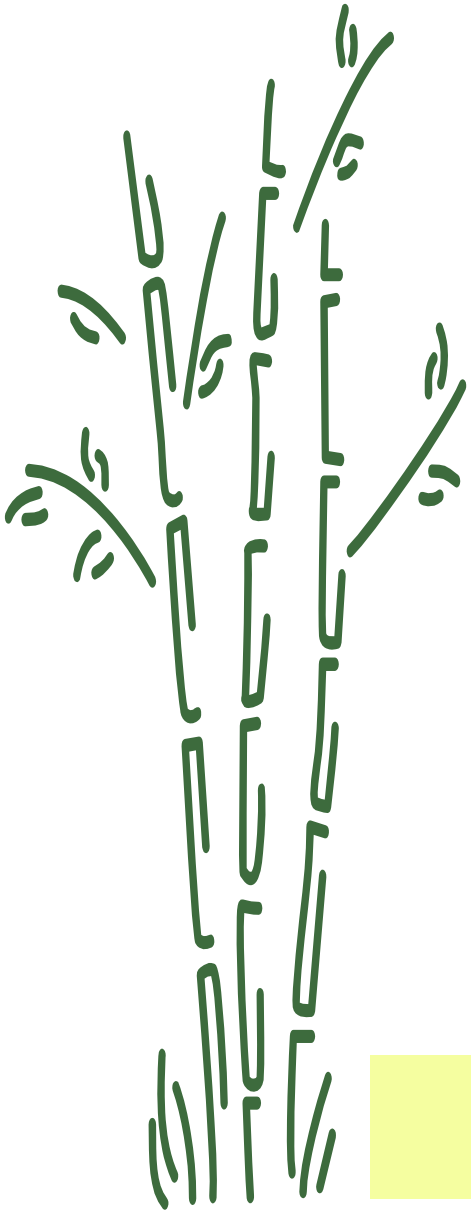
19th April 2007

Sugar Industry's Role in De-risking India

- Ensure India never imports sugar / imports are kept at a minimum – especially after demise of EU
- Need not burden the world with its food and energy requirements:
  - Sugar - @ 5% growth, 8-10 new mills to be commissioned every year (i.e. 40000TCD)
  - Power – demand growth at a CAGR of 6.3% over next 10 years, installed power capacity to grow from 125,000 MW to 220,000 MW during this period
  - Transport fuel – oil consumption set to rise phenomenally with steady increase in car ownership in India

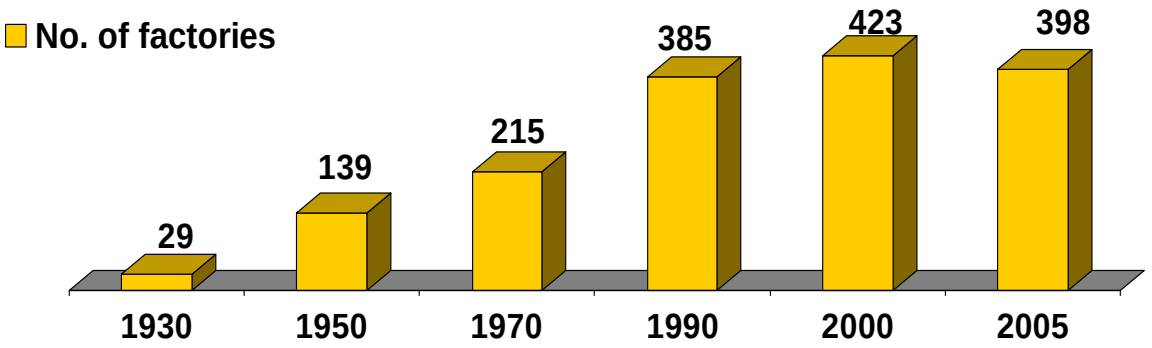
India is competing with itself!



Sugar

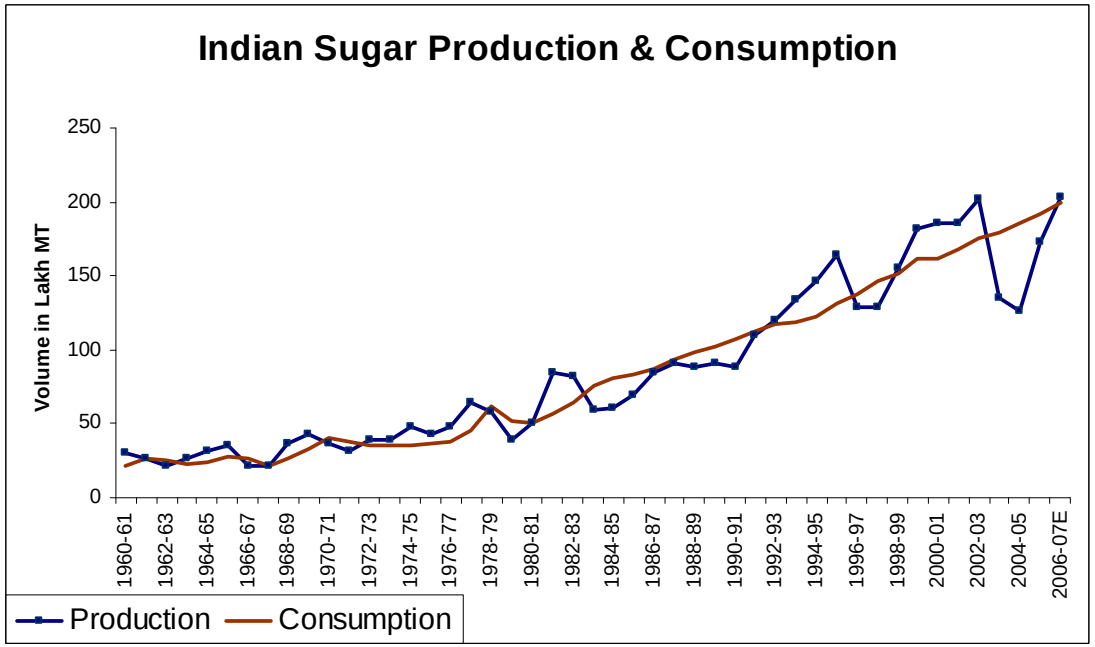
Grow Our Own Food

Indian Sugar Industry - Growth



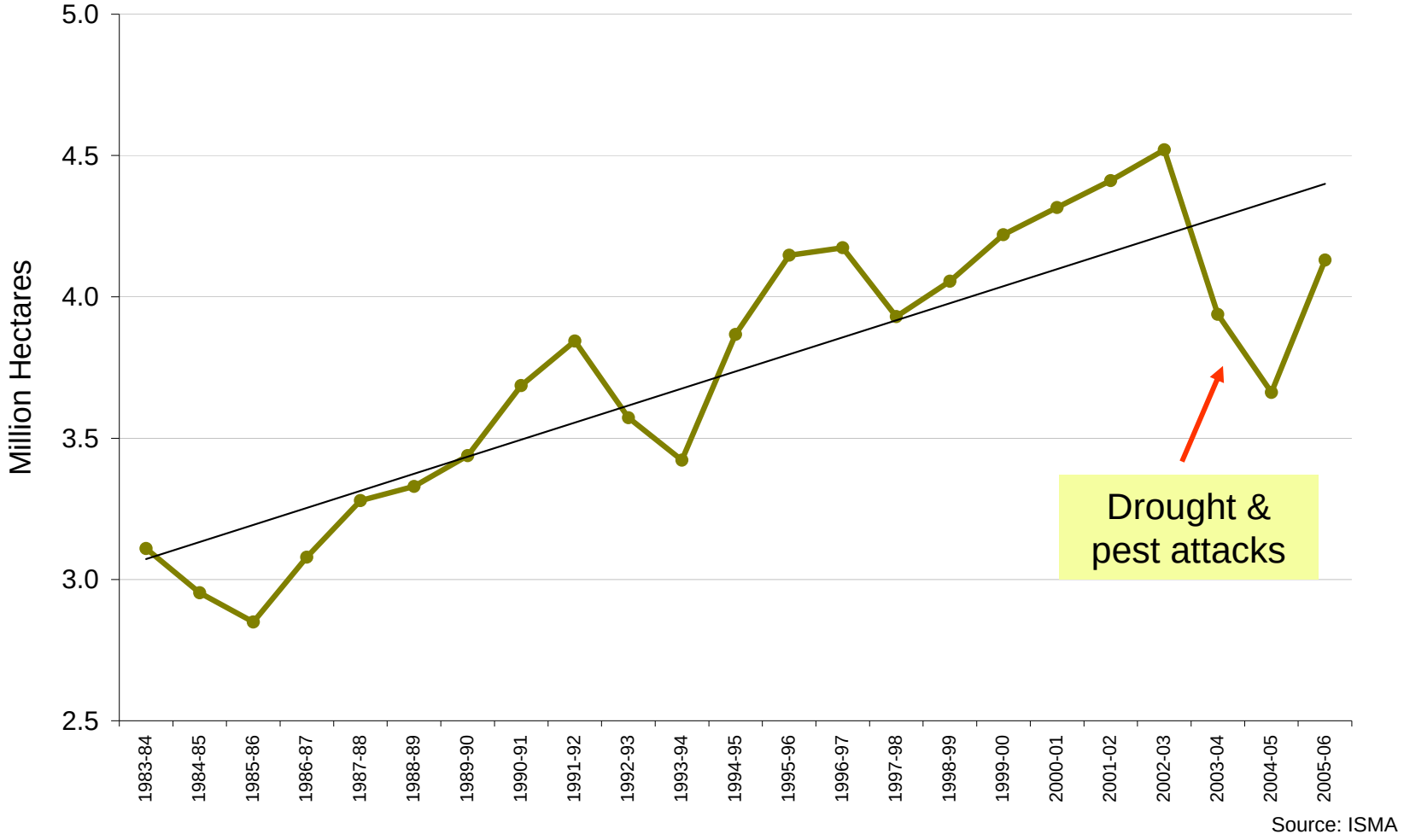
Proven capability

- **Ability to take care of domestic demand**
- **Farmer and industry have responded to the call of the nation**



Source: ISMA

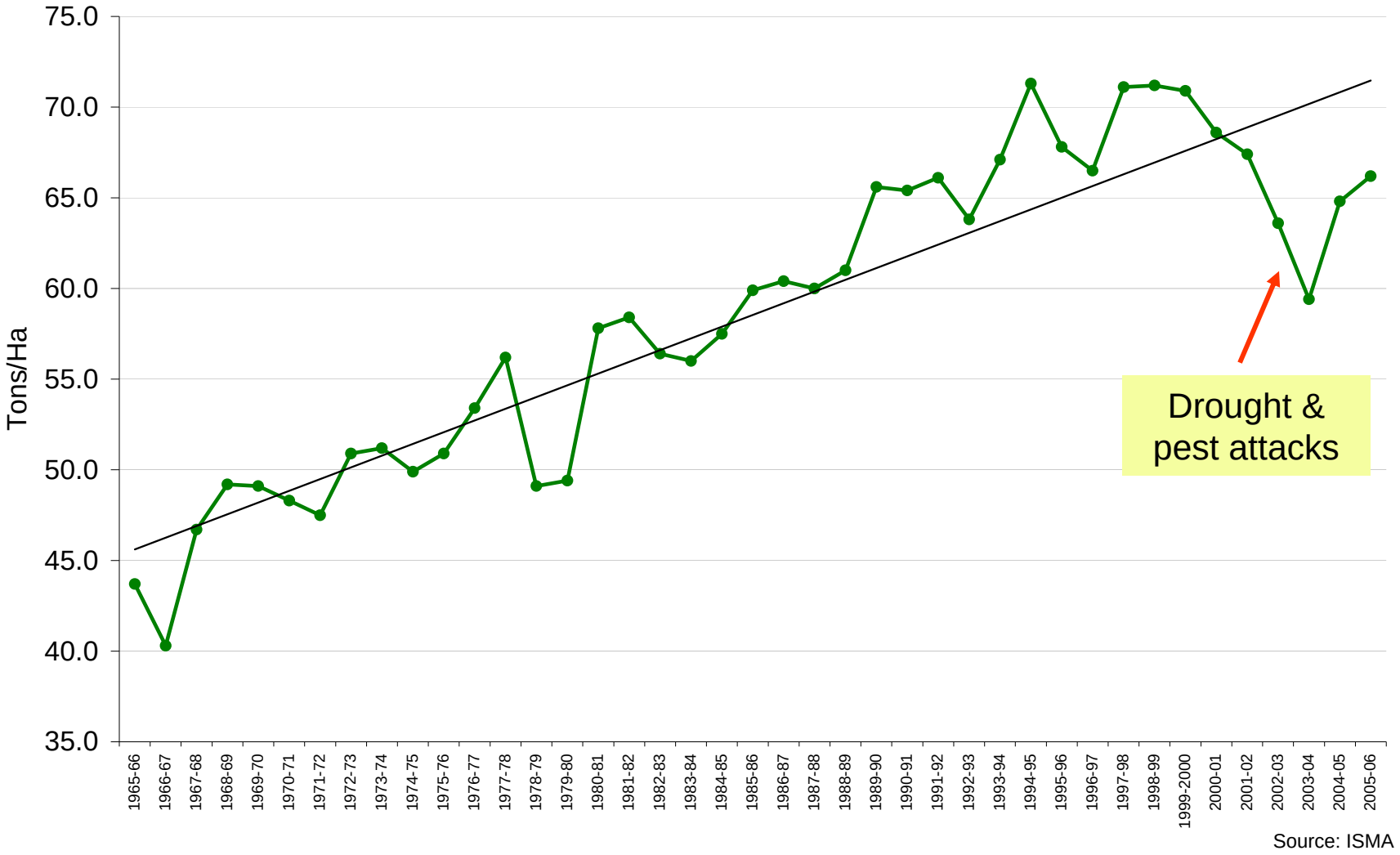
Area Under Sugar Cane



Source: ISMA

Cane area has been growing at a CAGR of 1.2% since 1983

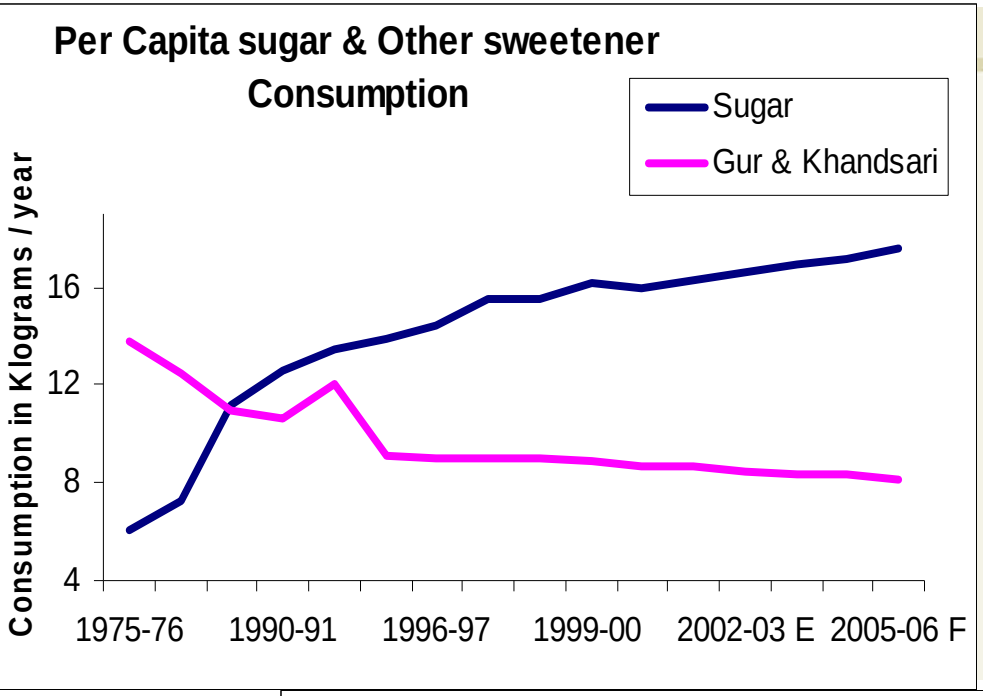
Trend in Yield of Sugarcane In India

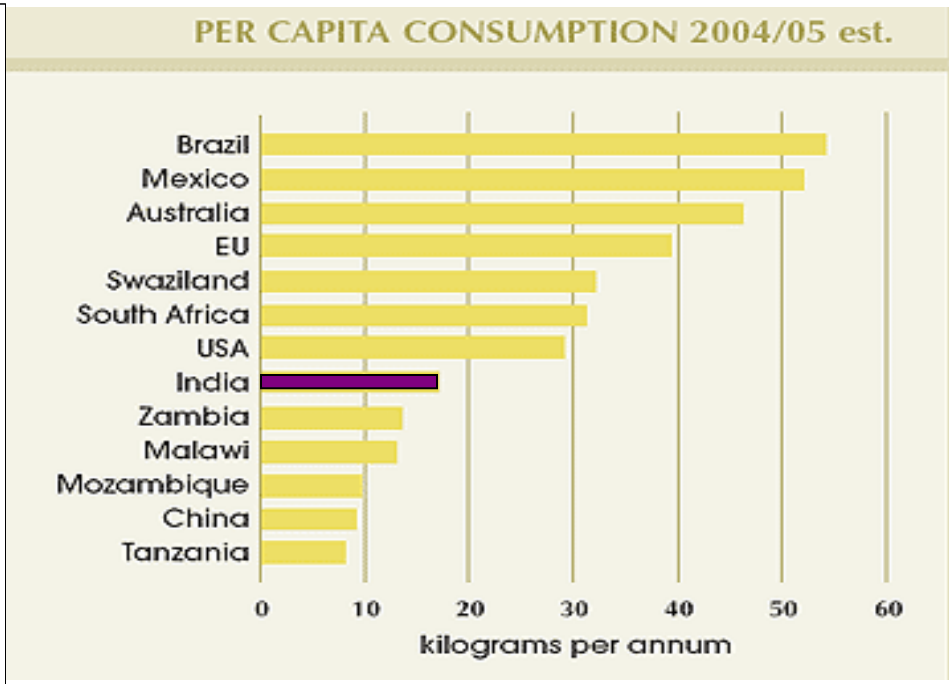


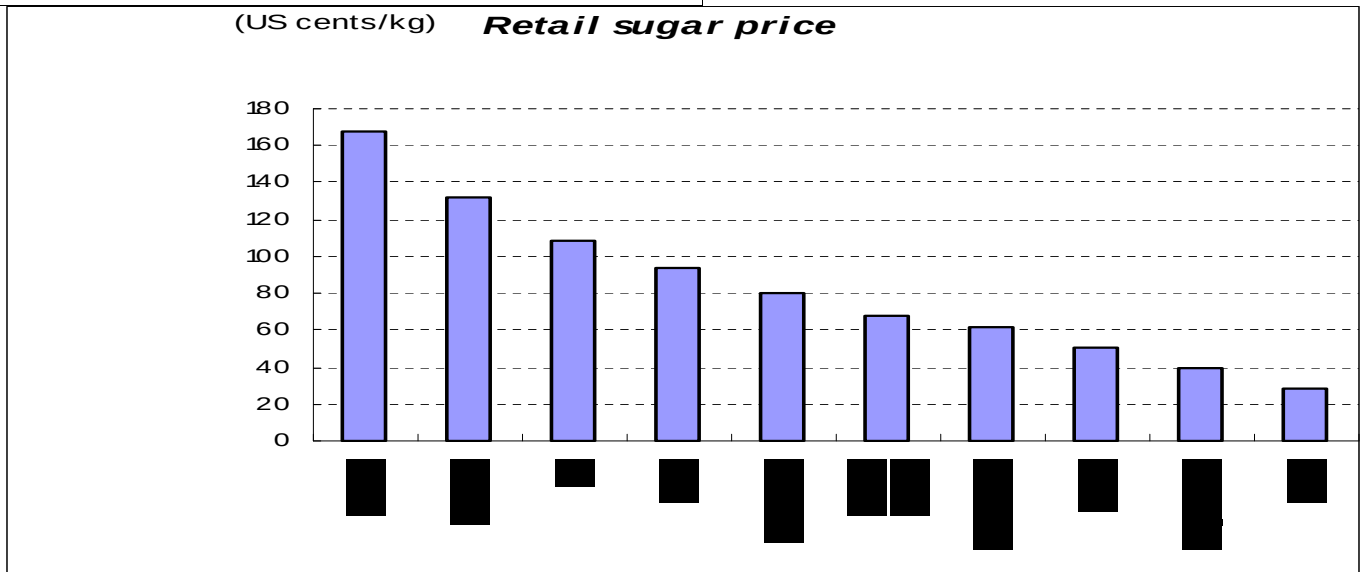
Source: ISMA

Yield has improved steadily over the past 4 decades albeit at a CAGR of 1%

Indian sugar Industry – the potential





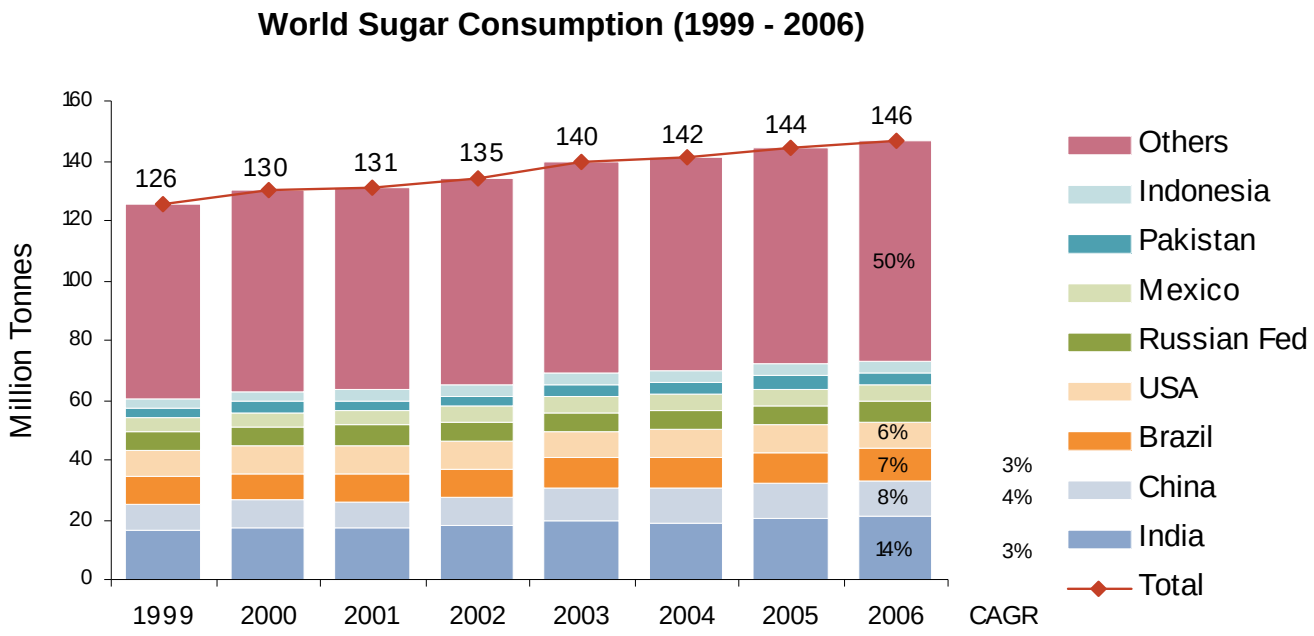


Meeting the Consumption Challenge

- With GDP expected to grow at 8% on a sustained basis, Indian consumption is expected to grow at around 5.5 to 6 % per annum in the near future
- This growth can be comfortably met by increased production
  - Continued declining trend in per capita consumption & growth rate of gur and khandsari vis-à-vis corresponding increase in centrifugal sugar
  - Inefficient to efficient operations
  - Yield improvement
  - Demand for fiber and molasses for value added products resulting in increasing demand for sugar cane

All the above factors are compelling reasons for industry to invest in sugar sector – capacity creation & expansion; integrated complexes; technological advancement

… Asian consumption continues to grow – an opportunity for India ?

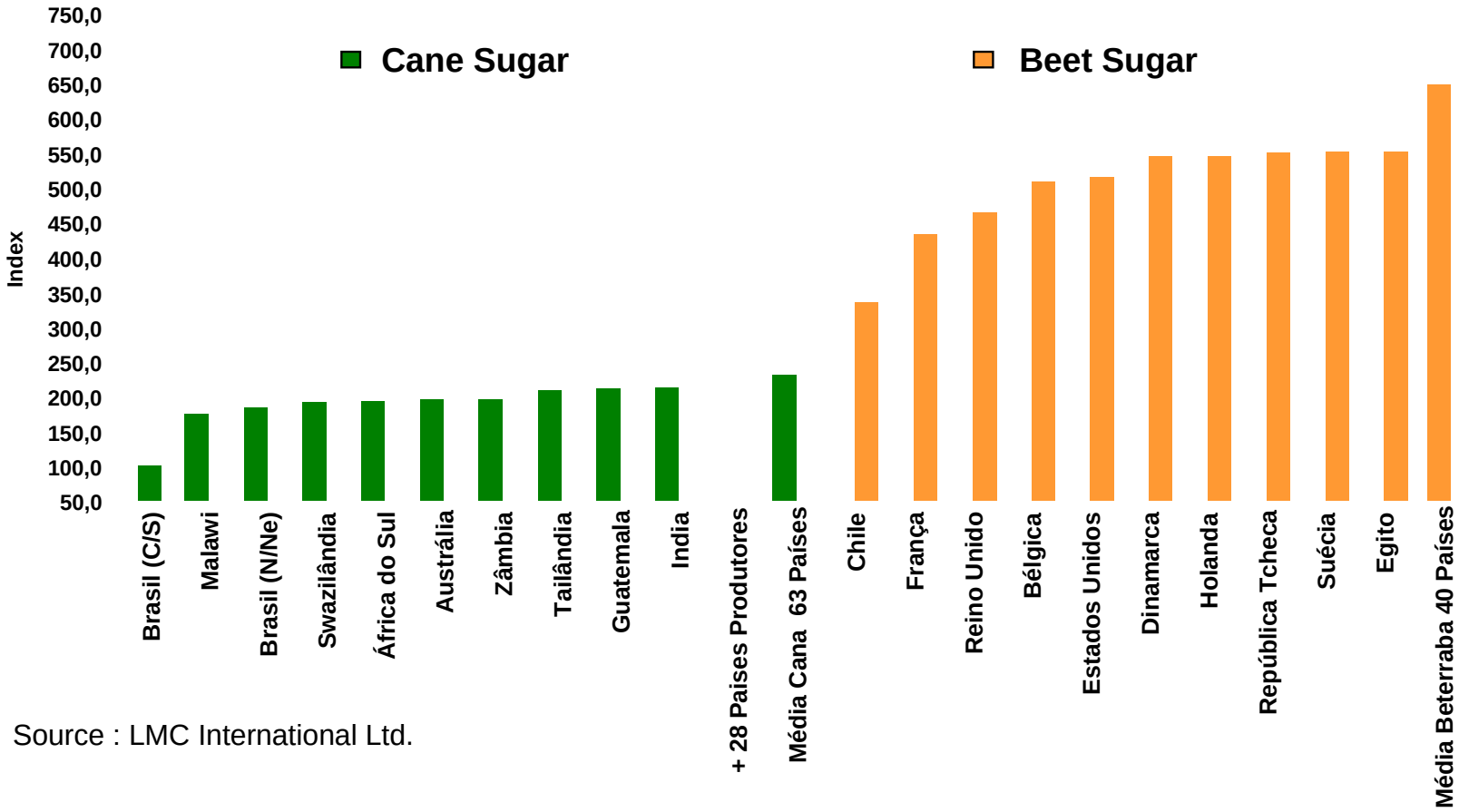


Source: F.O. Lichts World Sugar Yearbook 2007

The world consumption has been growing at a steady pace with Asia having an increasing share

Two Crops - Same Product

Production costs from sugarcane and sugarbeets 2002/2003



Source : LMC International Ltd.

Median cost of cane-based sugar is 37 % of beet-based sugar
Outcome: WTO Ruling against EU sugar subsidies in 2005 & 06

Energy Security

“Reliable energy supplies at affordable prices (and environmentally sound)”

– U.S. Energy Plan, 2001

- Energy security is broader than oil, includes natural gas and electricity
- Oil security is an international issue, relates to stability of the world oil market which is one great pool

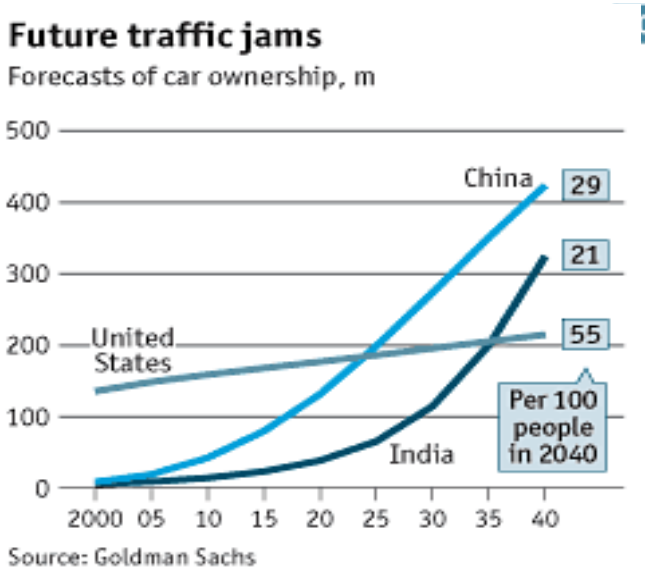
Brazil & India : Global powerhouses of Sugar Cane & Products

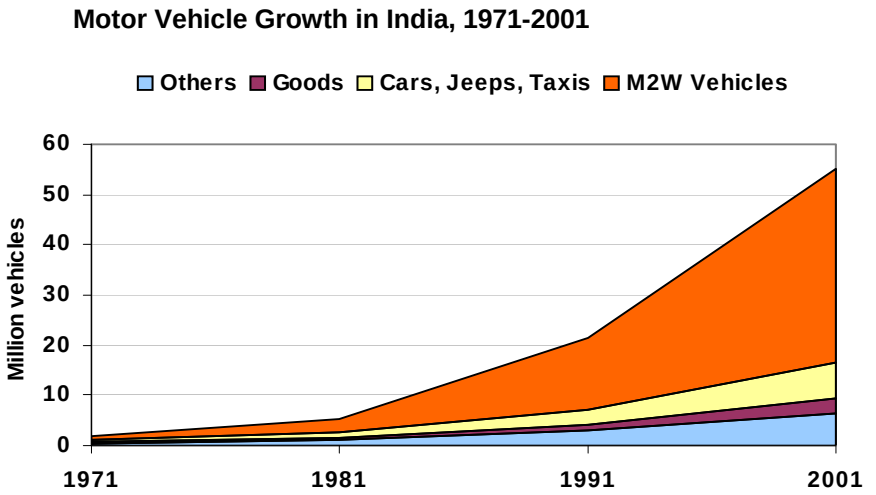
- Brazil: the largest producer and exporter of Sugar & Ethanol
- India: the largest consumer and the swing factor in global trade
- Both the countries witnessed a surge in investments in the sector recently
- Huge growth potential in both the Brazilian and the Indian industry:
  - ***Emerging energy dynamics***
  - ***Progressive demise of the subsidized sugar regimes***

Challenge of Energy Security: India

- India is the sixth largest crude consumer in the world
- India is the ninth largest crude importer in the world
- India imports over 70% of crude oil requirements, expected to rise to 100% in next fifteen years
- Commercial energy demand will grow at 4.5% per annum till 2020, as economy grows at 7 to 8% annually over this period.
- Automobile sales: Average annual growth rate 21% over last three decades; doubling period under four years

Data sources: Indian Institute of Technology Delhi





Source: Ministry of Shipping, Road Transport & Highways, Government of India, 2004.

India's response…

- India has set up among the largest programs of renewable energy in the world
  - Wind Energy -Fifth in the world
  - Solar photovoltaic -Second in the world
  - Production and utilisation biogas -Second in the world
  - Among the largest bagasse based power exporters in the world
- Country with highest CDM Potential (WADE)

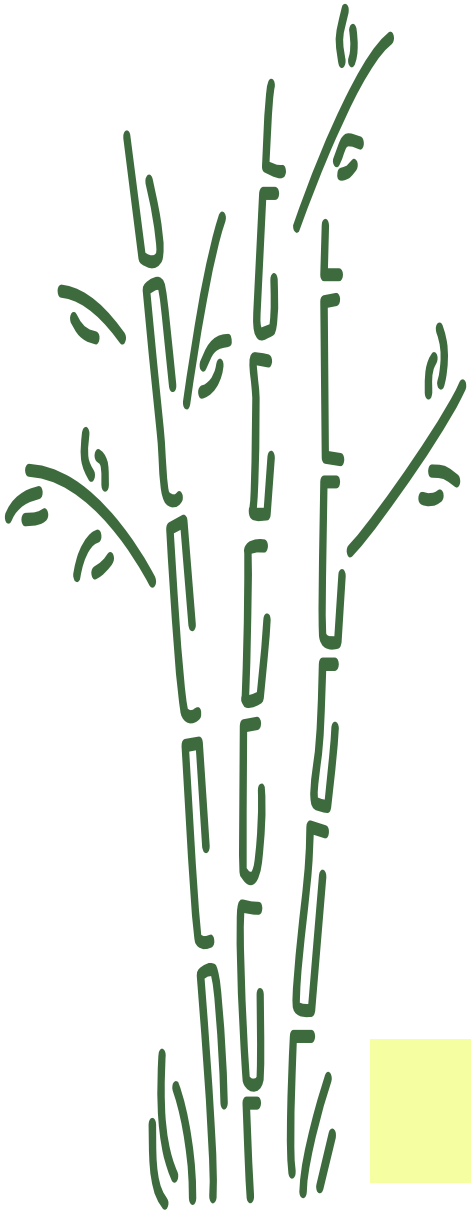
Data sources: Indian Institute of Technology Delhi

"Energy is an important input for economic development. Since exhaustible energy sources in the country are limited, there is an urgent need to focus attention on the development of renewable energy sources and use of energy efficient technologies. The exploitation and development of various forms of energy and making energy available at affordable rates is one of our major thrust areas"

Dr. Manmohan Singh

Hon'ble Prime Minister of India

Sugar cane based energy addresses all the 3 "E"s – Energy, Economy, Environment



Electricity

Grow Our Own Power

Electricity – Indian Scenario

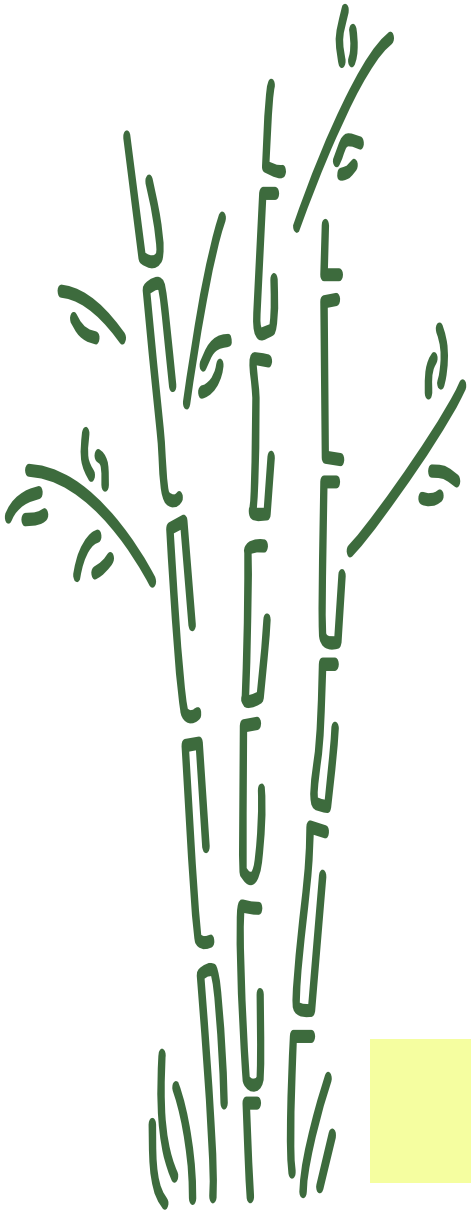
- 50% of rural households depend on kerosene and another 48% on electricity
- 89% of urban households depend on electricity and another 10% on kerosene.
- Role for renewables in remote areas where grid difficult.
  - Decentralised energy systems
- Agriculture:
  - For pumping water and mechanisation.
  - Both electricity and diesel used. About 20% of diesel use is in agriculture.

Electricity Cogeneration by Sugar Industry

Cane crushed in 2006-07	260	million tons
Potential for Cogen		
Bagasse	78	million tons
Potential power generation capacity	7000	MW
Potential export power	4000	MW

Current exportable power – 750 MW (about 12% of the industry exports power)

- Economic benefits
  - –Improved commercial performance of sugar industry
  - –High efficiency of energy conversion – cogeneration
  - –Cogeneration is local: reduced network costs and losses
  - –Improved supply to local businesses and communities
- Social benefits
  - –Increased access to electricity supply - potential to support rural electrification and development
- Environmental benefits
  - –Enables India to meet the goals for “green energy” from renewable and sustainable biomass
  - –Reduced GHG emissions (especially compared to coal burning)
  - –Reduced particulate emissions



Ethanol

Grow Our Own Oil

Ethanol – the opportunity

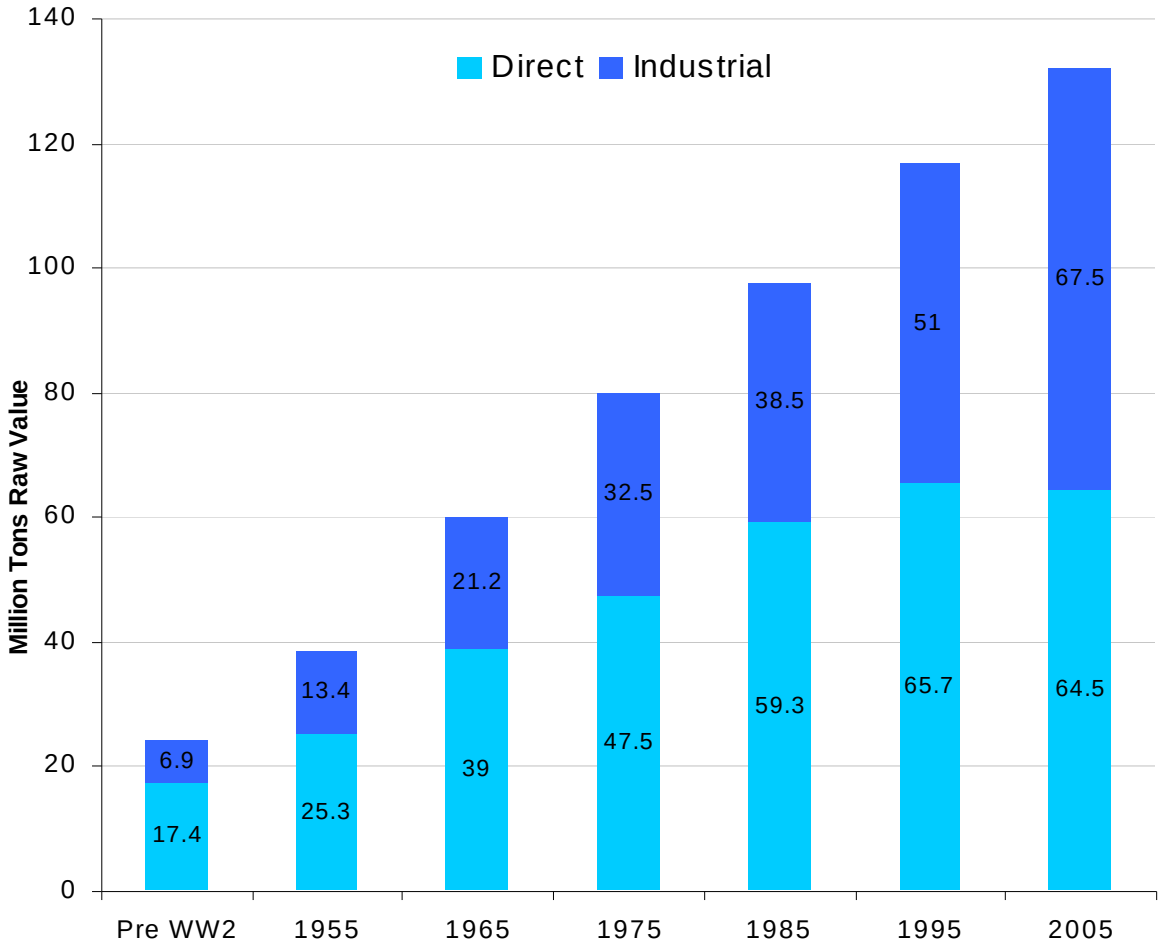
Potential for Ethanol		
Molasses expected	10.8	million tons
Alcohol production	2430	million litres
Requirement for E10	1100	million litres
Requirement for potable liquor	700	million litres
Requirement for chemical industry	600	million litres
Total requirement	2400	million litres
Surplus	**30**	million litres

- Potential for surplus ethanol available even after E10
- Facilitates Energy security through reduced dependence on imported crude oil
- Higher ethanol production is possible thru B molasses route
- Needs single umbrella central policy support for nationwide offtake
- Indian industry should aggressively explore possibility of Ethanol Exports to Japan and South Korea (for their strategic sourcing) due to geographic proximity and also to reduce their heavy dependence on imports from Brazil

Instead of making sugar, if cane equivalent of 1 million tons of sugar is diverted to ethanol (juice route) it will be more than adequate to address E5 requirements of the country

An industry on the threshold of further reforms…

Trends in World Sugar Consumption - Industrial & Direct



Source: American Sugar Alliance

Industrial Consumption outpacing retail consumption of sugar – pattern is the same in India

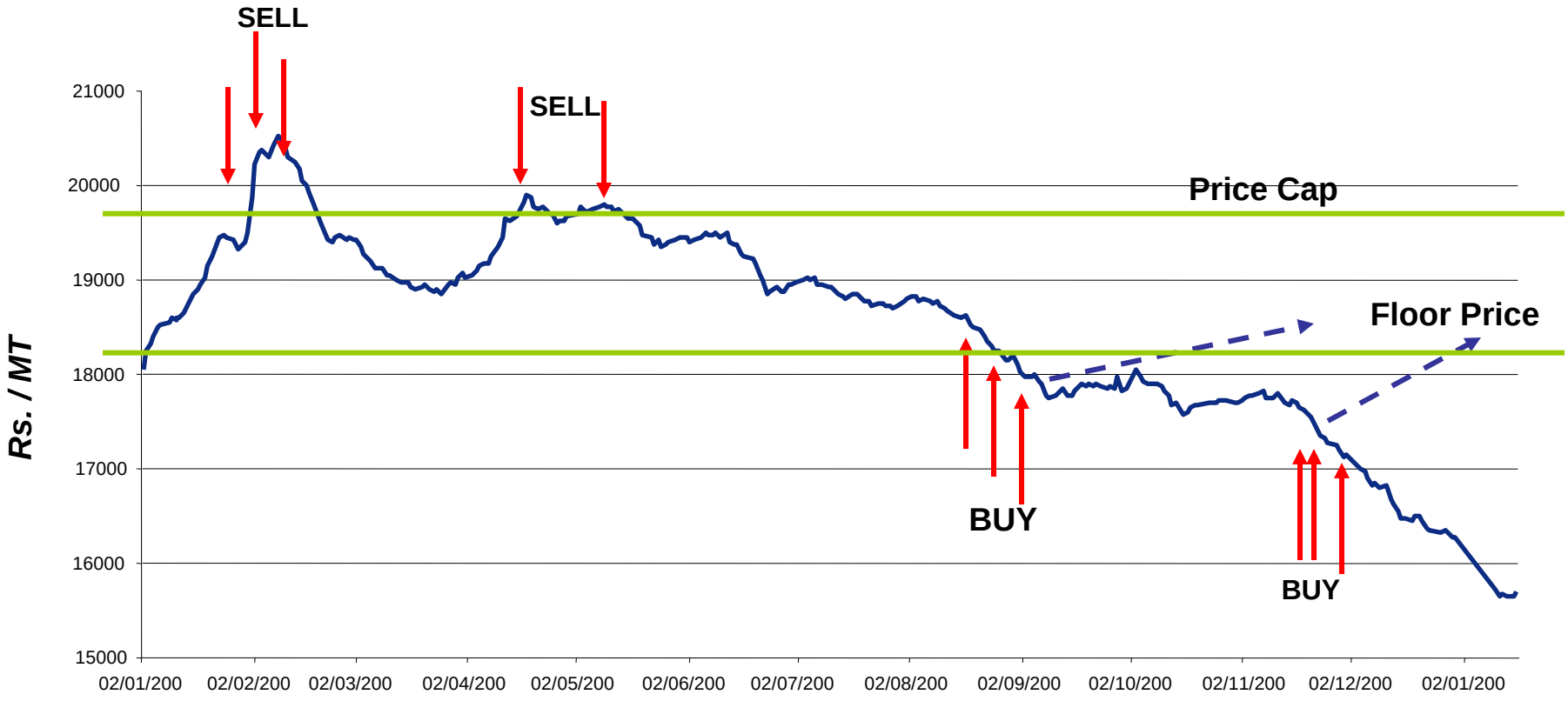
Ensuring Equitable Returns for all Stakeholders

- Clause 3D of the Sugarcane (Control) Order, 1966, advocates that the minimum price of sugarcane payable by a producer of sugar must be fixed having regard to the interest of:
  - the farmer
  - the consumer
  - the price at which sugar is sold by the producer
- In the Indian context cane farmer's have to get a higher cane price
  - A minimum support price must be in place
- From subsidising the consumer and providing sugar for levy, industry to move to an era where sugar price realisation will be linked to cane price
  - Mechanism of strategic stocks to be introduced to maintain price equilibrium

Ensuring an equitable system of returns will ensure long term sustainability of sugar industry

Strategic Stocks – Buying & Selling to Maintain Price

- To establish a system of strategic stocks of sugar at national level
- Government will buy sugar and stock it when prices are low; sell when prices are high in order to maintain prices within a band
- Will be a self-financing scheme
- The management of the strategic stocks will be under a regulatory authority



Price to be maintained within a band – export for compulsion; import in deficit times

Technological Progression

Field

- Mechanisation of farm operations in Indian context
- Productivity improvement i.e. sucrose/hectare
  - Yield improvement – tonnage & sucrose
- Satellite mapping
- Water management/conservation
- Sustainable cane farming practices

Factory

- Efficiency improvement
- Multiple equipment to single equipment
- Automation
- Manpower productivity
- Building flexibility in product mix – raws, 45s, liquid sugar
- Integration of sugar, power and alcohol operations
- Quality, safety and environmental management

With consistent improvement in productivity and cost reduction India can be even more competitive in the world context

The Few Key Drivers

Important

Integration, plus flexibility in operations and product mix

Vital

Technological progression to continuously lower costs and increase efficiencies across the entire value chain is vital

Fundamental

Co-ordination and co-operation between stakeholders

Thank You