

PRESENTATION

On

*“Overview of Sugar Manufacturing
Sector of Pakistan”*



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Introduction

- Sugar (sucrose) is a carbohydrate that occurs naturally in every fruit and vegetable.
- Crystallized sugar was reported 5000 years ago in India
- Around the eighth century A.D., Arabs introduced sugar to the Mediterranean and it was cultivated in Spain.
- It was among the early crops brought to the Americas by Spaniards



Pakistan Sugar Industry

- In the manufacturing sector, Sugar Industry is the 2nd largest after textile and contributes 2% to GDP and 13% to the manufacturing sector
- 78 sugar mills operating in Pakistan
- As per world statistics Pakistan Holds,
 - 5th Position in terms of area under Cane Cultivation.
 - 7th position in terms of Cane Sugar Production.
- 19 distilleries producing Ethanol with an annual production capacity of 400,000 tones plus



Pakistan Sugar Industry (contd.)

- Out of these 19 distilleries 6 have the capacity to produce fuel grade ethanol, the molasses to ethanol ratio is 5:1
- These distilleries are operating at 60% of their installed capacity
- PSMA (Pakistan Sugar Mills Association) is the official body and represents the Industry.
- PEMA (Pakistan Ethanol Manufacturers Association) is under registration as the official body of the distilleries.



Pakistan Sugar Industry Statistics 2006-2007 & 2008

➤ Cane

Source: PSMA Report 2007

	<u>2006-2007</u>	<u>2007-2008</u> (expected)
• Production of cane sugar	3.52 Million Tons.	4.36 Million Tons.
• Cane Yield	53.1 Yield / Ha	53.10 Yield / Ha
• Molasses Production	1.91 Million Tons.	2.5 Million Tons.
• Cane Utilized by Mills	73.78%	80%
• Recovery %	8.70%	8.75%
• <u>Cane Price</u> (Season 2007-08)		<u>Avg. Sale Price</u> (as of March 2008)
- Sindh	Rs. 67-63/40kg	Sindh Rs. 22
- Punjab	Rs. 60/40kg	Punjab Rs. 23
- NWFP	Rs. 65/40kg	



Key Indicators Analysis of Pakistan vs Key Sugar Producers

Table -1

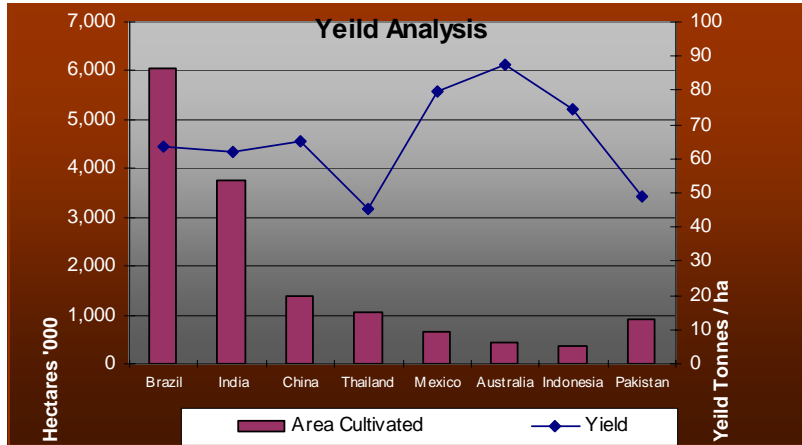


Table -2

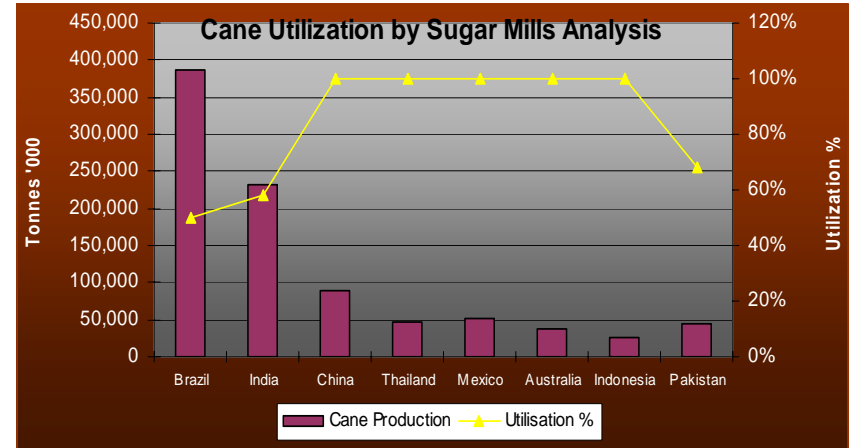
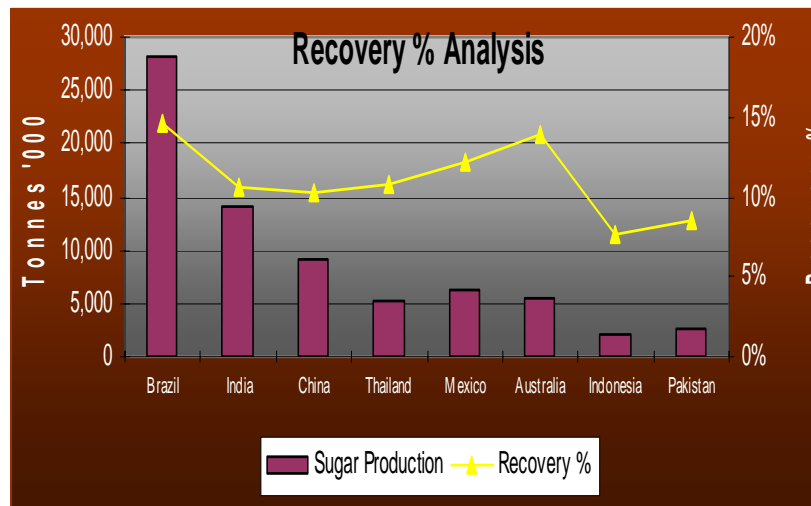


Table -3



Note:

We are very low in yield, cane and Recovery as per International market.



Sugar Production v.s. Consumption in Asia (2006-2008)

Table -1

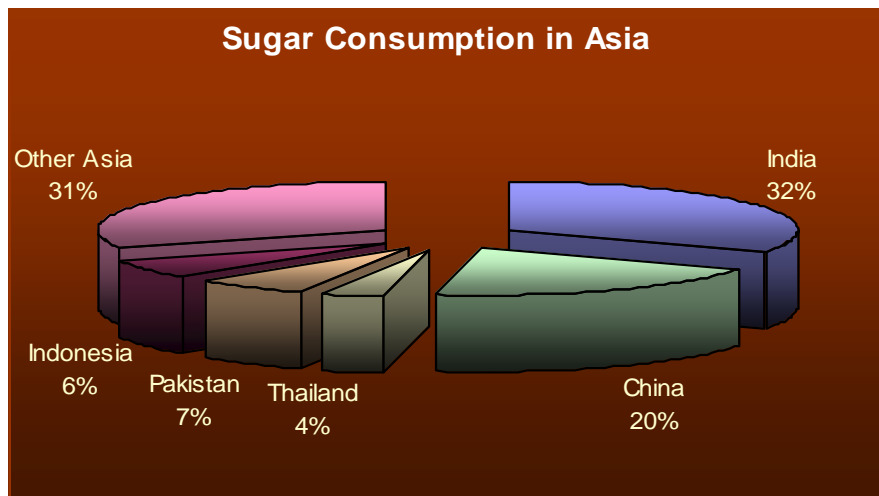


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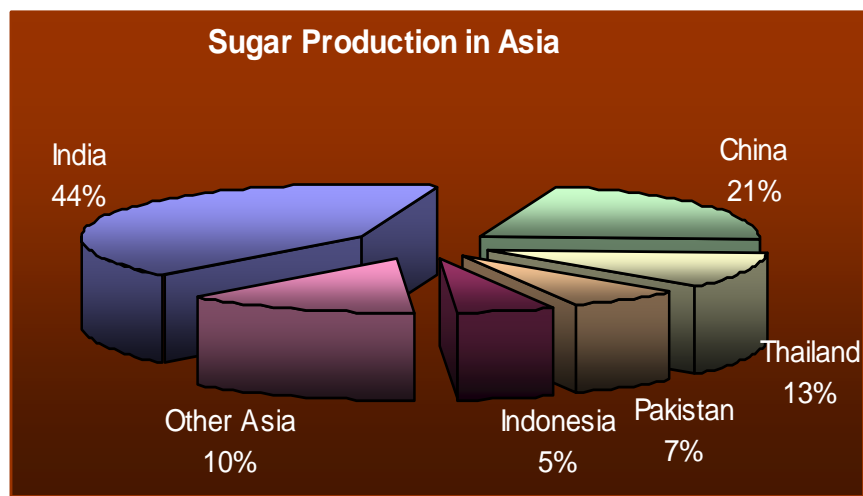
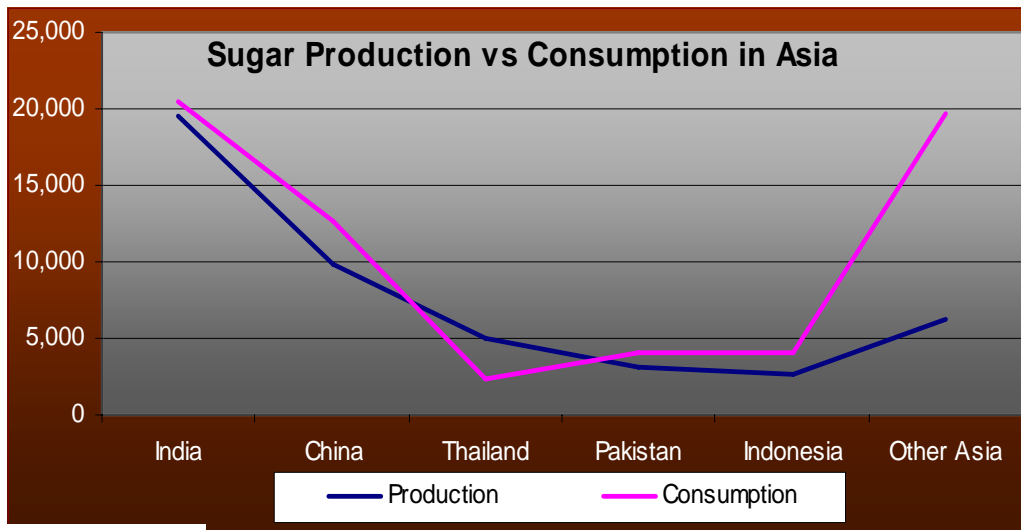


Table -3



summary

Production		Consumption	
2006/07 estimated	2007/08 forecast	2006/07 estimated	2007/08 forecast
million tonnes, raw value			
64.2	68.5	68.4	70.3

Source: www.fao.org



Recent Trends in Sugar Industry of Pakistan

- Large scale awareness amongst mill owners to improve:
 - a) Production Losses
 - b) Heat Recovery
 - c) Value Addition
 - d) Improve Cane Variety
 - e) Cogeneration
 - f) Improve Technology
 - g) Corporate Farming
 - h) Yield per acre

- Many National & International consultants have been visiting Pakistan to guide & undertake improvement projects, specially from India.



The New Look - SUGAR

THE ZERO WASTE INDUSTRY

Utilization of Sugarcane



Cane Received at Sugar Mills

Sugar

- Raw Sugar
- Liquid Sugar
- Brown Sugar
- Pharma grade Sugar



Molasses

Ethanol



- Acetic Acid
- Alcohol
- Gasohol
- Animal Food
- Herbal Medical
- Bio gradable Plastic
- Ethyl Acetate Acid

Waste water

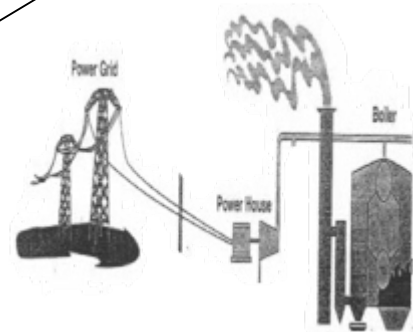
Filter Mud Cake

Fertilizer

Biogas

Bagasse

Electricity



Chip Board

Distillery

The Basic Facts of ETHANOL

- Two main types of Ethanol,
 - Hydrous Ethanol (min 94% ~ 96%)
 - Anhydrous Ethanol, fuel grade (min 99% or more)
- Ethanol is produced generally from Molasses and Corn. In Pakistan this is produced from Molasses which is a waste product of Sugar Industry.
- USA is producing Ethanol from 14 million tons of Corn from a total production of 20 million tons.
- There is resistance from several groups of using food (corn) to make Ethanol (fuel & energy)



The Basic Facts of ETHANOL (Contd.)

- With crude oil prices around \$110 a barrel, the world is looking for alternative energy, such as ethanol-blended petrol, bio-diesel, CNG etc.
- In 2007 the world produced a total of 45 billion 988 million liters of ethanol. The top two producers are the United States (16.14 billion liters) and Brazil (16 billion liters).
- Export of Anhydrous Ethanol growth of 264% in last 5 years 2001 - 05.
- Focus is shifting on Ethanol production, more Sugar Mills adding Distillery with Sugar Plants.



Ethanol Blending & its Benefits

- Ethanol was first used as fuel in 1908 when Henry Ford designed model "T" to operate with Alcohol.
- Reduction in Carbon Monoxide and Hydrocarbons by 35 to 50%..
- Ethanol has high octane value than gasoline, meaning that ethanol burns cooler and is gentler on the vehicle's engine.
- By blending 10% Ethanol in gasoline, It increases the octane rating by 2/3 % resulting in increase performance of automobiles.
- A survey report shows; 9% of growth in use of ethanol in USA. No change required in the engine up-to E10 blending in any type of cars.



Ethanol Blending in Pakistan

- In Pakistan Ethanol is produced from Molasses without effecting production of Sugar.
- Govt. is actively thinking of blending upto 10% (E-10) The Ministry of Petroleum is reviewing this.
- Production of Molasses in Pakistan is around 2 million Tones.
- Last Year(2006-07) 250,000 tons of Ethanol were exported & this year Ethanol production is expected to 300,000 tons.
- Within Pakistan lower grades of Ethanol can only be sold to Pharmaceuticals Industry.
- Sugar Millers have already invested more than \$ 1 billion in installation of 19 Distilleries.



Ethanol Blending in Pakistan (Contd.)

- With expected consumption of 1.6 million Tones of Gasoline in 2006 - 07 and considering E10 formula requirement will be around 160,000 Tones of Ethanol, saving more than \$500 million of forex/year.
- Currently CNG (Condensed Natural Gas) has resulted in 10.5% decrease in Gasoline consumption over last year
- Over 1.2 million cars are using CNG and the rate of conversion / manufacturing is about 10,000 per month.
- It is expected that E-10 can bring down the price of blended fuel by Rs. 5-7 per liter and play an important part in fuel conservation.



Earnings of Sugar Industry through Carbon Finance

- Change in environment through emission of Greenhouse gasses is destroying the Ozone layer, leading to higher temperature in the world. In last 100 years a rise of 1.33 degree is reported.
- The world signed the Kyoto Protocol in 1997 to limit the gas emissions and thus the concept of Carbon Finance was initiated.
- The CERs (Carbon Emission Reductions) issued and sold in Climate Exchanges are generating funds for companies & the world.
- India & China have earned to the tune of nearly \$ 7 and 12 billions respectively.
- In 2007 the carbon trade was of \$62 billion.
- Recently Citibank has allocated US \$50 billion and Bank of America US \$20 over next 10 years to invest in this trade.¹⁶



Sugar Industry and its related projects

The projects that can be installed at sugar mills

	For Sugar Mills without distillery		For Sugar Mills with Distillery
1.	Heat Preservation	additionally	Wastewater treatment
2.	Power Generation upto 1500 MW		Biogas from wastewater
3.	Trash collection for boilers		CO ₂ collection
4.	Manure and Fertilizer		Expected additional CERs per mill:
	Expected CERs per Mill: 75,000-100,000 tons annually		125,000-150,000 tons annually

CER: Certified Emission Reduction



Potentials for CERs & Dollar value in Sugar Industry

No. of sugar mills without distillery = 58

No. of sugar mills with distillery = 19

1 CER = US\$15

CER generation = $(100,000 \times 58) + (150,000 \times 19)$

= 5,800,000 + 2,850,000

= 8.65 million CERs

Value = \$130 million (for 1 year)

Upto 2012 = \$ 650 Million

Note:

This is just income from Carbon Finance. Additionally the industry will get additional revenue from sale of electricity, saving in baggase, steam efficiency, fertilizer etc.



What more need to be Done ?

- Develop Institutes to produce Sugar technologists in Pakistan.
- Cane Research center at regional & national levels.
- A strong Government body to continuously monitor the development of this viable Industry capable of improving energy needs in electricity & petroleum.
- Improvement in technology, yields, recovery, cogeneration and Carbon Finance can add more than US \$ 500 million.
- Develop special financial structure for the specific means of this Industry which runs for 120-150 days.
- With massive rural base this Industry injects more than over Rs. 200 billion in the rural economy and over Rs. 150 billion to other industries
- We can become a regular sugar exporter & improves balance of payments



Conclusion

1. Sugar Industry has achieved zero waste by new forms of technology with marked improvement in results. Pakistan is way back in attaining this. We need aggressive Government support to achieve this.
2. While we have a definite source of earning Foreign exchange, our decision makers have no concept of Carbon Finance.
3. The Ministry of Environment should impress upon Ministry of Finance, Agricultural Industries etc. to enact relevant laws which would enable financial sector to give soft long term loans to achieve desired results.
4. A 3 years long cycle had negative impact on the sugar industry. Remedial measures should be taken for a growth oriented sugar policy taking in account Agriculture and Industrial miss match.



THANK YOU
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