MANAGING DIFFICULT TIMES

Presentation

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MUMBAI

By

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SUGAR ECONOMY HAS ALWAYS BEEN A RIDDLE LIKE THE FOLLOWING:

Availability of Funds Rs. 50.

SPENT	BALANCE
20	30
15	15
9	6
6	0
50	**51**

Likewise

sugar industry also is perpetually

in

dilemma of how to make both ends meet

i.e.

Revenue vs. Cost

and is

A RIDDLE

HOW TO SOLVE IT

Lets remember ….

- Sugar Industry in India is a rural based Industry.
- It plays a significant role – on rural economy and socioeconomic development of the region.
- The elements of Corporate Social Responsibility (CSR) are higher in sugar industry.

Therefore, for sugar industry, it's the economic rate of rating (ERR) that matters and not the Internal Rate of Return (IRR).

FOR SUSTAINABLE PERFORMANCE

SUGAR INDUSTRY MUST TACKLE WITH FOLLOWING ISSUES: -

- Sugarcane price linkages.
- Sugarcane productivity in sugar/ ha.
- Plant performance – Cost v/s Realization

Market forces and "Gods will" are the two determinants on which no one can have any control. Therefore, let the Market Forces prevail for a sustainable performance and growth.

IN A FREE ECONOMY
THERE SHOULD
NOT BE
ANY
PRE DETERMINED
PRICING
OF
RAW MATERIAL

ECONOMY OF SCALES – A MYTH

As sugar industry handles

perishable raw material,

it requires immediate processing.

ECONOMY OF SCALES- A MYTH (CONTD.)

Therefore, economy of scales needs to be seen differently.

WHY ?

- Large size plants require procurement of sugarcane from very long distances, increase cut to crush time – leading to rapid deterioration of sugarcane.
- Small land holdings.
- Very few sugar plants can be set up initially at high capacities as sugarcane crop takes long time to develop.

- Most large size sugar plants have expanded from very small initial capacities over time leading to multiple equipment – loosing advantages of reduced maintenance costs and neat plant layout- defeating the advantages/ purpose of **economy of scales**.

ECONOMY OF SCALES (CONTD.)

Further :

- In sugar production practically all costs are direct costs and the volumes have very little impact on costs.

Therefore, our focus should be on reducing through higher productivity (sugar/ha)

Sugar/ha is a function of :

- Sugarcane efficiencies
- Sugar in cane
- Plant efficiencies

PRODUCTIVITY

- A TOOL TO COST REDUCTION

Is improvements in efficiencies FINITE OR INFINITE ??

OUR ANSWER

INFINITELY FINITE

ITS ILLUSTRATED IN THE FOLLOWING COMPARISON OF POTENTIAL AND ACHIEVEMENTS

Productivity	Potential	Achieved in Australia	Achieved in India
Sugar Cane Yield T/Ha	200 - 250	85	70
Sugar content in Sugar Cane	18	17	12.0
Sugar T/Ha	33 – 40	12.5	8.4
	At 92 OR	At 85 OR	At 78-80 OR

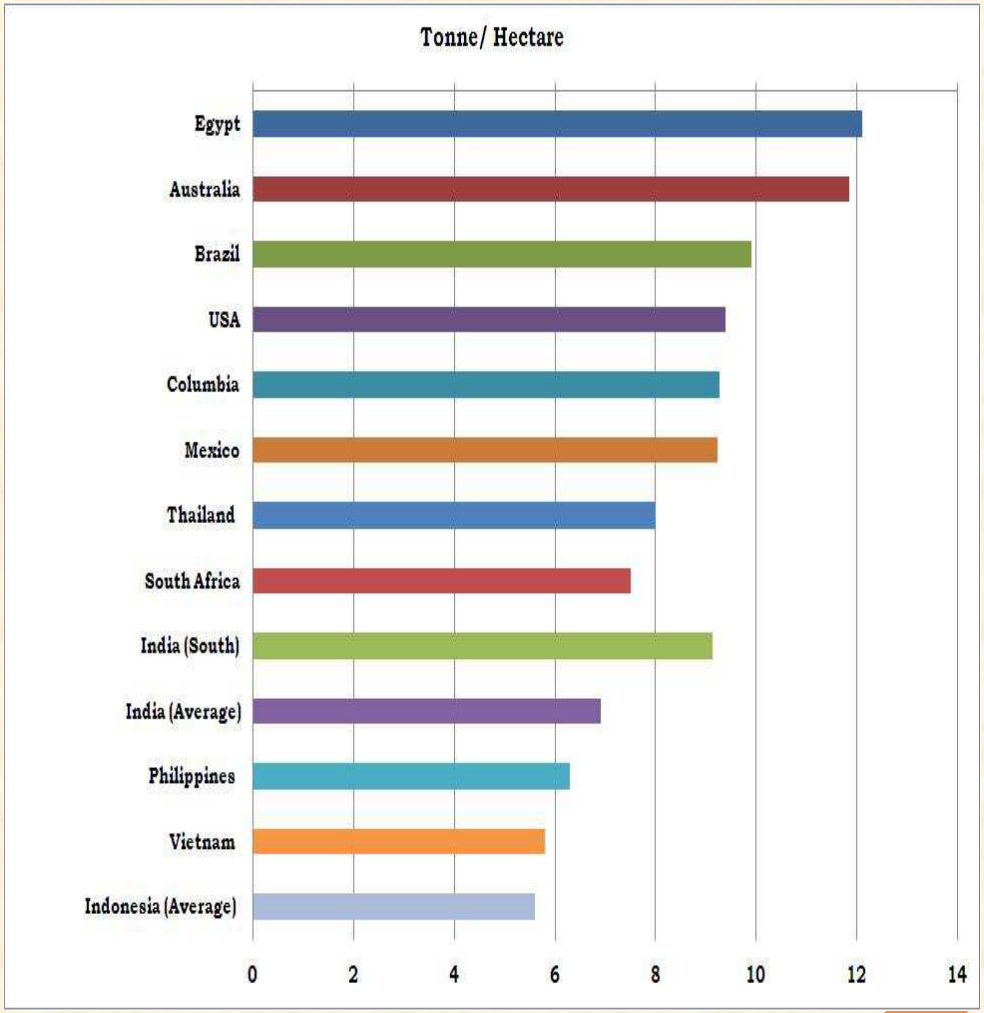
PER CAPITA SUGAR CONSUMPTION V/S EXPORTS

Country	Export	Per Capita Consumption
Brazil	29.3 MT	65.26 Kg
Australia	3.4 MT	65.12 Kg
Thailand	8.5 MT	49.26 Kg
Mexico	1.61 MT	47.33 Kg

NOTE: THE HIGHEST CONSUMERS ARE THE LARGEST EXPORTERS.

SUGAR PRODUCTION
PER HECTARE OF SUGARCANE AREA

Country	Tonne/ Hectare
Egypt	12.1
Australia	11.85
Brazil	9.91
USA	9.38
Columbia	9.26
Mexico	9.22
Thailand	8
South Africa	7.5
India (South)	9.13
India (Average)	6.9
Philippines	6.3
Vietnam	5.8
Indonesia (Average)	5.6



Any increase in sugar/ha brings money to all stake holders

THEREFORE LETS

AIM FOR A

WIN - WIN

SITUATION

SOME TOOLS……

- Benchmarking
- Data Capturing
- Technology Interventions
- Process Automation
- Backend Refinery
- Manpower Productivity/ Management
- Integrated Water Management

PRODUCTIVITY BENCHMARKS

Benchmarking is essential for productivity improvements . Unfortunately, the tools that industry uses for benchmarking are very outdated and not reliable.

DATA CAPTURING

Existing laboratory procedures are completely

incapable of mirroring the actual performance.

REASONS : -

- Lack of representative sampling.
- Very few samples (say 2 to 3 in a shift which cannot reflect the entire band width of 8 hours)
- Inadequate analytical equipment.

THE WAYOUT

ONLINE ACQUISITION OF DATA ON REAL TIME BISIS LIKE:

- Juice extraction – On line
- DMF – On line
- Bagasse weighment - On line / Fibre
- Syrup Brix
- Final Molasses Brix – On line
- Consumption of Power
  - KWH / Ton Cane
- Temperature of BFW (before deaerator)

ESSENTIAL ANALYSIS

PURITY OF
A, B, C FORE SUGAR
AND
C AFTER SUGAR

SOME EXPLANATIONS

- The task of the mill is to extract juice and not pol- right or wrong
- Bagasse Moisture- Easy to assess online and is representative for sugar loss in bagasse.
- Molasses brix- Good indicator of sugar in final molasses
- Power consumption per tonnes cane- Good indicator of overall factory performance.

TECHNOLOGY INTERVENTIONS

Current changes in concepts and system require to introduce / reintroduce technologies.

Examples :

- Single cyclones for separation of mud from juice
- Replacement of clarifier and vacuum filter with fully automated filter presses

OR

Transfer clarifier underflow to mills.

- Installation of Thermo Vapour Recompressor (TVR)
- Intelligent use of DCH
- Shifting of existing continous pans to A boiling etc

PROCESS AUTOMATION

- Operational monitoring and need based process automation can improve plant efficiencies manifold.
- Following areas of process automation are meaningful:
  - Juice stabilisation
  - Ph control
  - Pan automation
  - Online syrup and melt brix monitoring
  - Process water monitoring and control, etc.

BACKEND REFINERY

Sugar refinery should **NOW** be an integral part of the sugar factory :

WHY NOW ?

- Major demand from bulk consumers offering premium
- Processes sugar at neutral Ph causing reduced sugar inversion, high sugar recovery and minimized corrosion.
- Reduced cost of chemicals and resins
- Availability of robust automation and control systems
- Reduced cost of steam and power due to extensive vapour bleeding and cogeneration facilities

MANPOWER PRODUCTIVITY/MANAGEMENT

In a continuous process industry, the manpower should be discretely deployed on the following functions :

- System engineering
- Design
- Preventive maintenance
- Monitoring

There should be very little need to deploy manpower **for operation.**

Remember - Manpower in operation is counter productive.

INTEGRATED WATER MANAGEMENT

Water is a valuable resource

- Aim for zero fresh water consumption through implementation of integrated water management scheme.

Following is the breakup of water requirement for a sugar plant at 100 TCH

Fresh make-up water requirement		**(in M^3/hr)**
➢ Equipment cooling water circuit	-	0.8 0
➢ Massecuite cooling water circuit	-	0.38
➢ Misc. (gland sealing lab etc.)	-	1.17
TOTAL		**2.35**

Make up recycled cooled water requirement (in M^3/hr)

- Vacuum filter cooling water circuit - 0.46
- Main injection water circuit - 7.16
- Misc. (washing & rinsing of vessels) etc - 0.67

TOTAL - **8.29**

Surplus Water outflow from the sugar mill (in M^3/hr)

- Net flow rate of surplus condensate, after meeting process water requirements and after deducting losses during its cooling - 21.00
- Make up recycled cooled water requirement - 8.29
- Surplus condensate (mildly contaminated) outflow - 12.71

CONCLUSION

Professional implementation of various modules

for sustainable performance will significantly

improve the cost dynamics for sugar mill and

---- solve the riddle


Thank You!