SCOPE OF POWER EXPORT IN SUGAR INDUSTRIES AND ITS BOTTLENECKS

ABSTRACT

- Pakistan is agro based country and its economy depends upon agriculture .70% of its population are habitant of rural area. Sugar Mills are located in remote rural area where there is extreme shortage of electricity. Sugar Mills have the capacity to generate power from bagasse which is 30% of the Cane crushed.
- It is estimated that about 2700 MW Power can be Exported to National grid by Sugar Mills in Pakistan .This paper highlights the difficulties which the industry faces when it Exports Power and also suggests some recommendations, for smooth execution of this transaction which is of national importance.

SCOPE

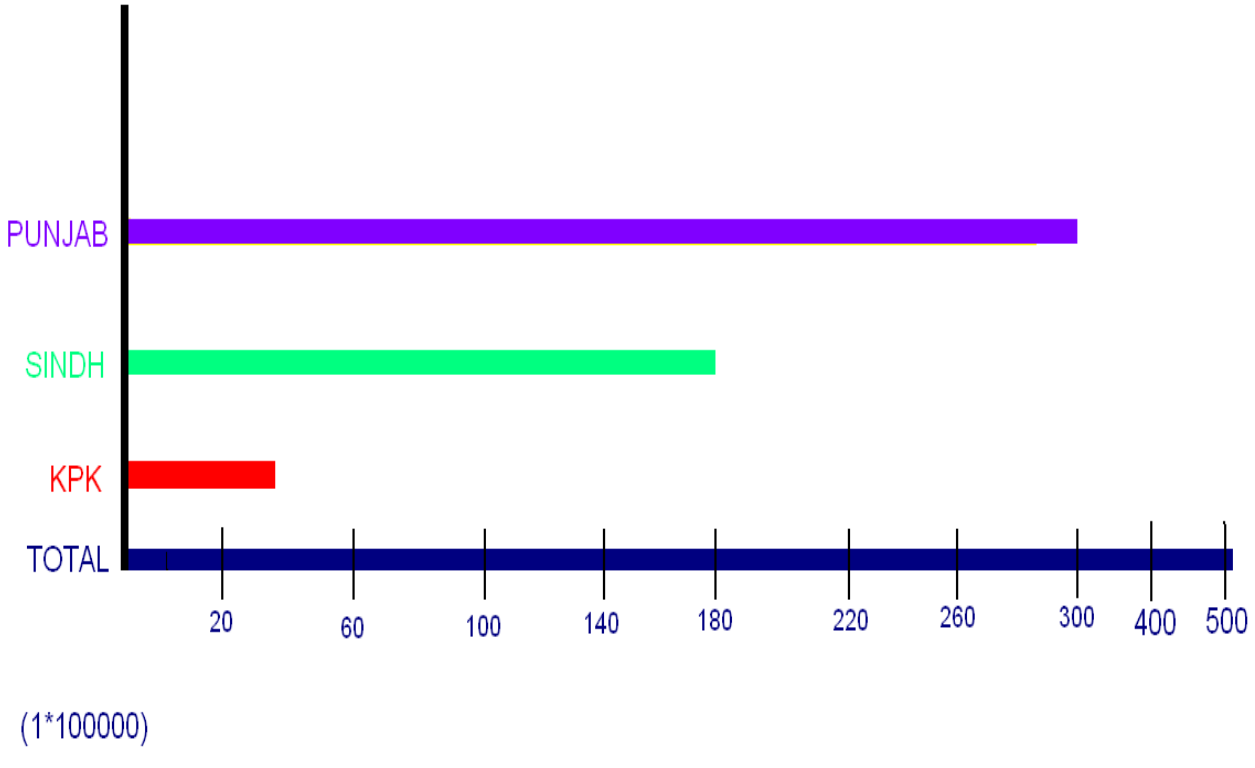
- By taking mean value of bagasse production from sugar cane and steam conversion ratio from bagasse, it is proved that sugar cane has large potential of power production. One simple calculation is sufficient for eye opening. One ton of sugar cane has average value of bagasse about 300 kg
- One Ton of Sugar Cane = 300x2.2/4.2 = 165 KWH
- Out of 165 KWH, 32KWH to 35 KWH is required for self processing system and balance 130 KWH can be exported to National Grid, which already is facing crucial shortage of power. As per policy of Govt. of Pakistan for Power Generation there is no restriction to export Power to WAPDA./National Grid . This is agro based resource of Energy which is beneficial for every one Following table illustrate advantages of all parties

Sr. No	Description	Offered Rate	Market Rate	Difference	Remarks
01	Up- Front Tariff	Rs.12.08	Rs.18.0	Rs.5.92/=	
02	Fuel Cost	2.017x2.861= Rs. 5.77	In thermal source it is less than all other source (Illustrate in Table #2		Rate of Bagasse and consumed quantity calculated By NEPRA
03	Fixed Cost Component	Which is included in Tariff in the favor of power exporting company			
04	GST 17%	To be paid to provincial Govt Rs.2.05/KWH by purchaser			
05	Operational Expenditure	Power Exporting Company bear this expenditure			
06	Self Utilization expenditures	Born by Power exporting Company			
07	Line Losses	0.84/KWH			
08	Net Benefit of Discos	Rs.3 /KWH			

1. Bagasse is most convenient to use as thermal source to generate power due to following advantages.
2. It is prepared fuel available in sugar Mills.
3. Easy to transport and handle.
4. Comparatively cheapest source from other thermal fuels as illustrated in following Table at 66 Barg systems.

Sr. #	Description	Fuel Required/KWH	Cost /KWH	Remarks
01	Bagasse	2.017 kg	5.04	01
02	Coal	0.54 kg	7.17	Transportation charges are not included
03	Natural Gas	0.4398 M3	7.99	
05	Furnace oil	0.353 kg	14.12	

- As per one survey of all over the Pakistan regarding Sugar cane crop of 2014-15, province wise detail of crushing shown in following t Picture.



Sr.#	Province	Cane Crushed in Metric Tons	Power Potential	Remarks
01	Punjab	29747764	1611 MWH	
02	Sindh	17360781	940 MWH	
03	KPK	3714311	201 MWH	
	Total	5,08,22,856	2752 MWH	

As per above data of Crushing Season of 2014-15 shown that this (6.6 Million MWH) during 100 days equal to 18% of total power consumption of Pakistan .This excess scope of Energy can reduce 50% load shedding in Pakistan and potential of above said 6.6 Million MWH can be utilized for 4 Months. In this way country will get rid off 50% load shedding for 8 Months .This bulk quantity of available potential of Power in Pakistan
Specially following facts proved it more beneficial for the country.

A. Power of sugar industries can be utilized at the time of power shortage periods due to less water available for hydroelectric generation
B. Power production through this available biomass is additional relief to main fuels as Natural gas, Coal and furnace oil
C. Sugar Mills are situated in the remote fertile cultivated areas, where power shortage is more than urban and Industrial areas. Sugar Mills generating Power could minimize the load shedding due to this agriculture and small industries will grow fast

- Here we only just one example about areas of Shaikh Bhirkio of Dist Tando Mohammad khan , in last season Faran Sugar Mills exported 1.5 To 2.8 MW Power through local feeder to TMK Grid Station., due to this power, load shedding of this local feeder decreased of 75% . This Power was available only for four months of season but due to this temporary relief of power increased the operational periods of Tube Wells, Lift Pumps and also small industries operations. Due to this Now in present conditions the Major Crops as Sugar Cane, Bananas horizontal growth noted 7 to 10% more than Normal and other short periods crops shown significant difference in yield in allocated areas of Digh Mori Feeder

ACHIEVED POTENTIAL

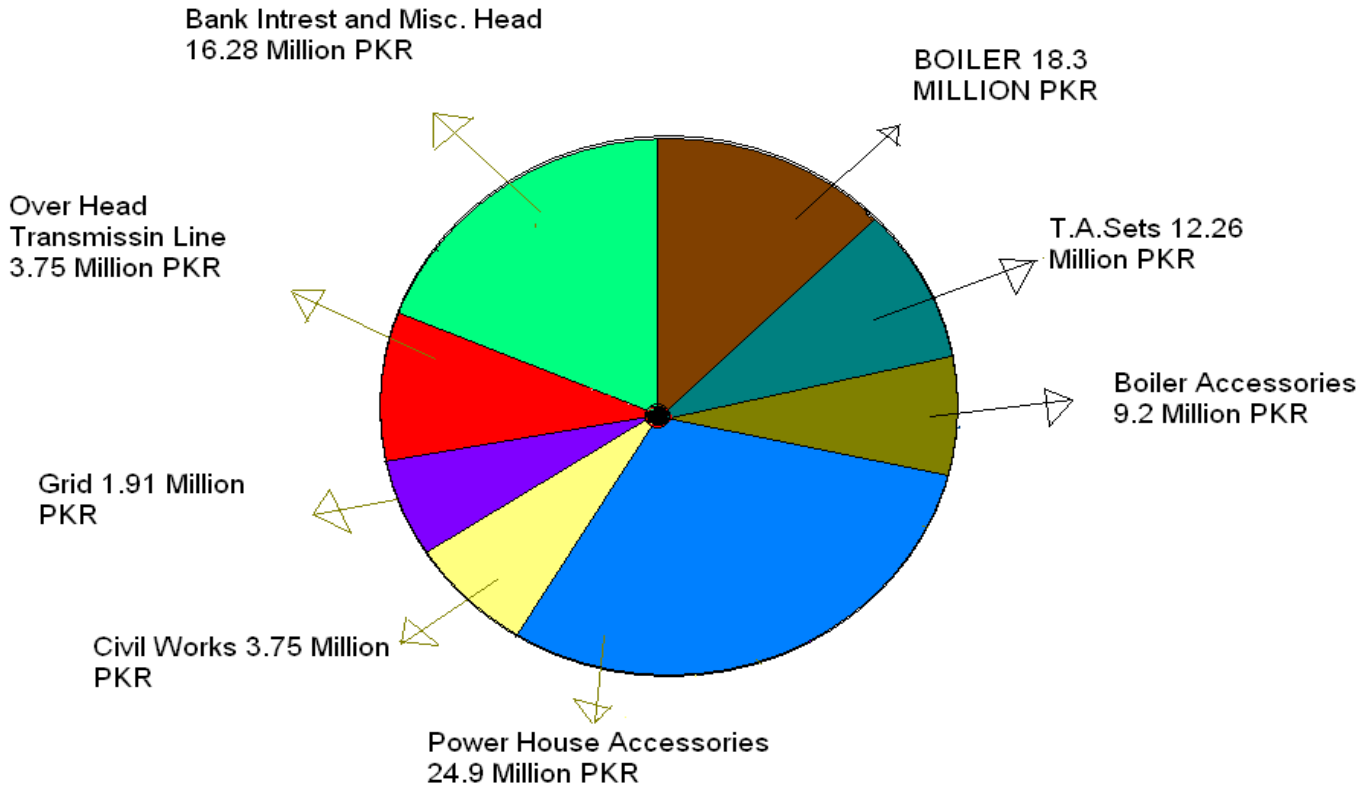
- Until from available 2752 (say)2700 MWH Surplus power of sugar industries could be utilized or under process/construction only as mentioned in following annexure

Sr.#	Province	(utilized)Power In MW	Under (Construction/Process) Power In MW	Remarks
01	Punjab	101.5	344.4	Achieved potential is only 6.7% and Pipe line will complete in coming two years then potential will be 21.4%
02	Sindh	67	50	
03	KPK	15		
	Total	183.5	394.4	

Above table shows that we are still away from the utilization of our existing possible source

BOTTLENECKS

It is due to many reasons, one cause is high initial cost of Project . One calculation made on 66 bar of 25 to 30 MW Power House Which is about 90.1 Million PKR/MW .Following Figure illustrated the different head of high pressure power house



It is well known fact that pay back of each investment is not more than 3 to 4 years. Sugar Industry will be more encouraged in the investment in power sector If Govt Authorities ensure existing upfront tariff of Rs.12.08/KWH and provide incentives on efficiency and size of plants. Just like other IPPs on coal and other thermal / renewable fuels.

Most people assume that sugar cane power production scope can be achieved by adopting a convincible power generation policies, fair method of implementation on available power generation rules and regulations, by facilitating and encouraging Sugar Mills for accepting power agreement with power distribution companies. Power generation Policies makers and Custodians of Power Polices as Ministry of Power, NEPRA, AEDB and CPPA should take care and should implement Power Generation and Power Purchase polices .

They should Ensure Sugar Industries that transparent policies could be strictly followed. It is noted that Govt. Authorities are dealing with dual standard; They are facilitating some local and international investors in Power Sectors .It is necessary that specially in power sectors above said authority adopt transparent polices which is in the favor of the country and must not be changed.

- Due to flexible policies local investors are discouraged and avoid investing their assets in power export projects. The dual standard of Govt. authorities is badly affected this renewable source of energy and each year country loose a bulk supply of electricity. In National interest it is necessary that Power custodian representatives avoid from following steps which discourage sugar industry accepting power export agreements

1) Last year NEPRA decreased bagasse based Tariff from Rs.10.22/= to Rs.7.82/=
2) Sugar Industries revision cases against above said decisions are still in pending
3) NEPRA takes long time in the approval of power acquiring requisitions (PAR),due to this many Sugar Mills are awaiting to export Power or Approval of power purchase agreements
4) Recently DISCOS pended the due bills of sold units of Sugar Mills since last six months ,while it is clearly mentioned in PPA on legal papers that .(The Power Purchaser will make payment against each invoice submitted by the company within 25 Working days from the date of receipt of the invoice by the power purchaser)
5) AEDB Alternative Energy Development Board is working on wind, hydrel ,Solar and Biomass but for accepting Up front Tariff under Power Generation polices, terms and conditions are very difficult
6) Transparent policies of Power wheeling. must be more cleared and Energy banking system should provided electricity at input end to Sugar Mills during Off Season Procedure is mentioned in NEPRA guide line in para iv but Time is not mentioned (In practical terms, the power producer shall supply power to the grid at one location would be entitled to receive the same amount for self use (say, at a factory) at any other location (within the same distance from the grid, as the distance of plant from the system), upon Payment of a corresponding Wheeling Charges, to be determined by NEPRA

PSMA must raised above problems with NEPRA and other Govt. Authorities .Urge them for the solution of above matters

RECOMMENDATIONS

1. It is advisable for Sugar Industry to go for Power Generation in spite of all the bottlenecks
2. Appreciable financial gain can be achieved
3. The Co-generation program can be phased out by exploiting the indigenous resources in the 1st phase
4. Prudential practices of Cogeneration can be applied
5. Power export can be increased by the utilizations of necessary energy saving appliances.
6. NEPRA should urge DICOS and other concern authorities to repair transmission lines and make ready and able all related equipments which involve power export from sugar industries such as Transmission lines switch gears and grid stations etc

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