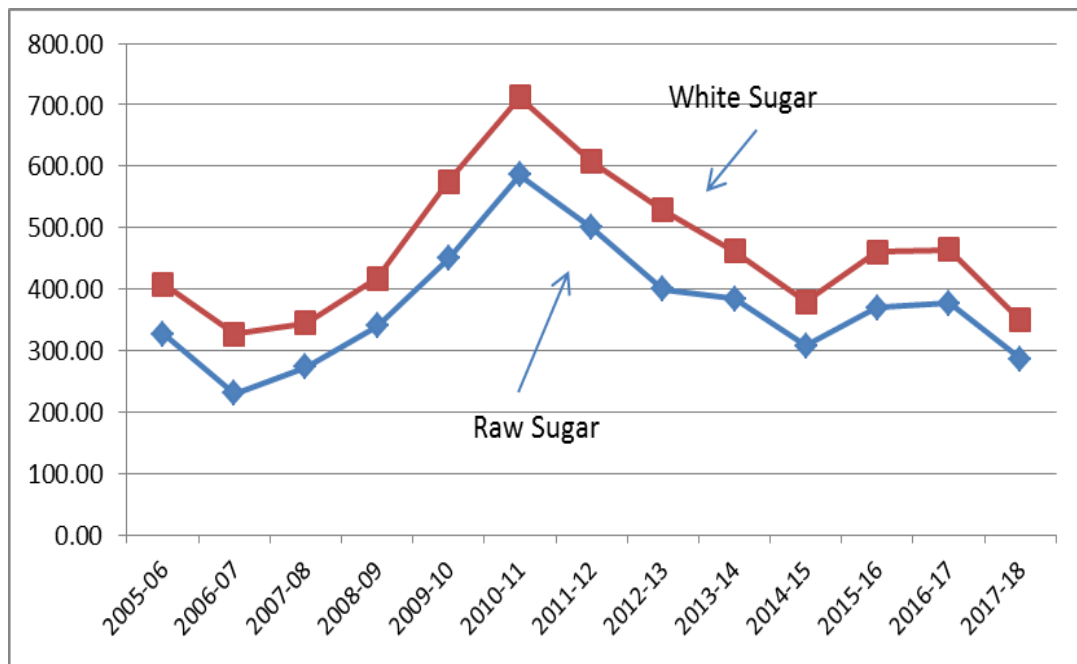




SUGARCANE POLICY ANALYSIS FOR 2018-19 CROP



AGRICULTURE POLICY INSTITUTE
MINISTRY OF NATIONAL FOOD SECURITY AND RESEARCH
GOVERNMENT OF PAKISTAN
ISLAMABAD

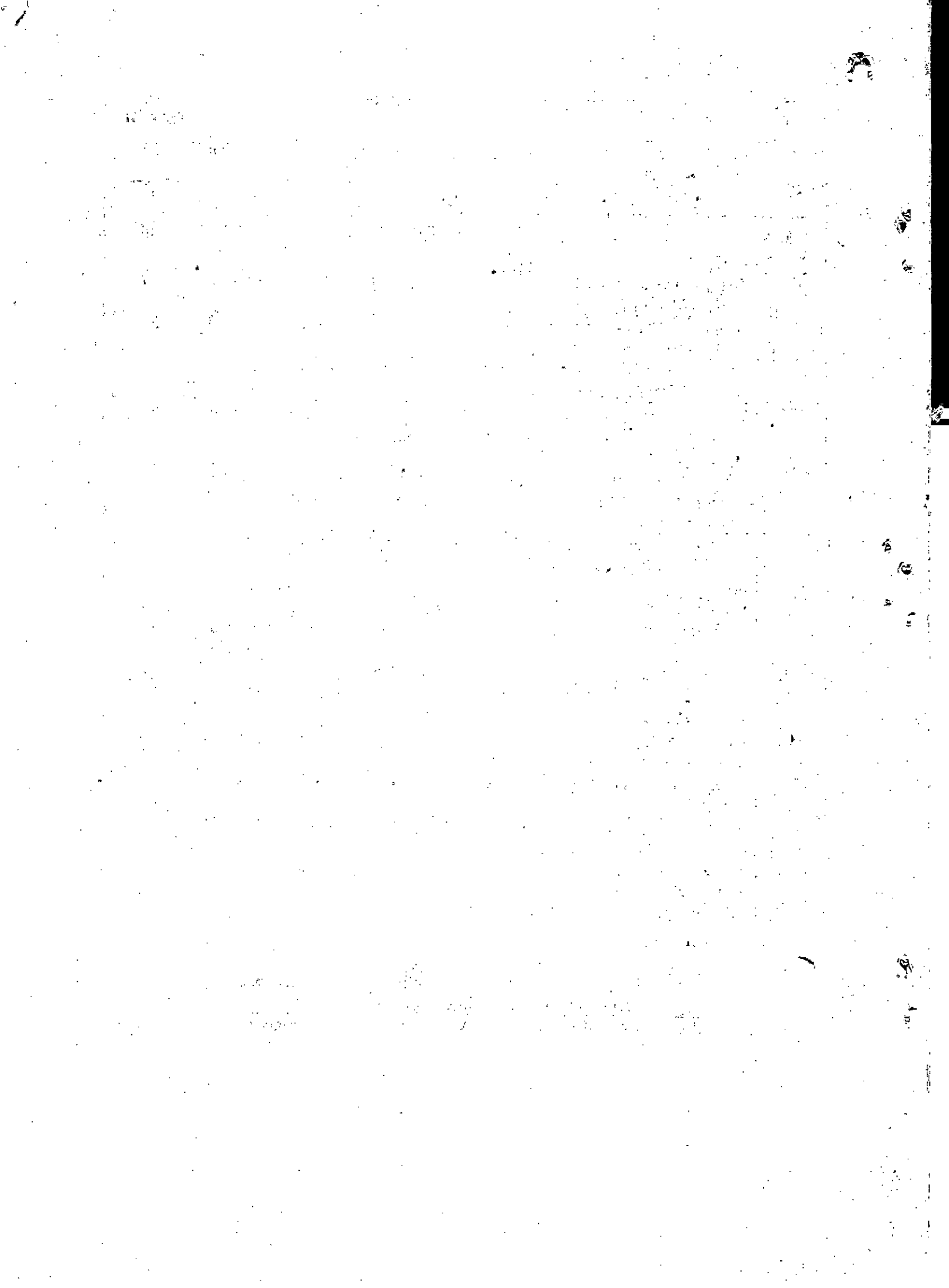
September, 2019

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SUGARCANE POLICY ANALYSIS 2018-19 CROP

EXECUTIVE SUMMARY

AND RECOMENDATIONS

Price of Sugarcane for 2018-19 crop

Sugarcane is the second largest and second most important cash crop of Pakistan. Cultivated over one million hectares, it occupies about 5 percent of the total cropped area. Its share in value added by major crops has ranged between 11-13 percent during the last five years. It also provides valuable by-product (sugarcane tops) as fodder for livestock. Sugar industry of Pakistan comprising of more than 89 sugar mills depends on sugarcane farming for raw material. Located mainly in the countryside it provides not only employment opportunities for rural labour but also contributes to rural development through the provision of infrastructure and many other forward and backwards linkages. Moreover, sugarcane farming and sugar industry have significantly contributed to the public exchequer in the form of excise duty and other taxes. However, indiscriminate expansion in the sugar industry particularly towards cotton zone has not only led to uneconomic horizontal expansion in sugarcane cultivation on marginal lands but also posed a serious threat to the country's water resources and foreign exchange earnings from cotton crop.

Changes in Area, Yield and Production

During last ten years, area under sugarcane at country level ranged between 2329.8 and 3315.7 thousand acres, production ranged from 49.373 to 83.333 million tonnes and yield ranged between 19.67 to 25.13 tonnes per acre.

Economics of Sugarcane and Competing Crops

In Punjab, growers' returns to overall investment based on the indicative price announced by the provincial government i.e Rs 180/40 kgs, remained higher for sugarcane, which performed better than the entire crop combinations. None of the combinations could compete with Sugarcane in terms of returns to purchased inputs. Similarly, Sugarcane also out-competed

both Basmati and IRRI combinations in terms of irrigation water. However, cotton + wheat and cotton + sunflower rotations performed better than sugarcane in this indicator. Sugarcane growers, in Sindh too, have been largely reported receiving the prices lower than the indicative price announced for the year 2017-18. Presuming that the farmers received the indicative price, the analysis presents a favourable situation for Sugarcane performing better than the competing crops, especially in terms of output-input ratio and returns to purchased inputs. In view of its longer duration, sugarcane crop in the Sindh province requires more water and other inputs as compared to Punjab. The higher yield of Sindh by 16 percent over Punjab may be explained in terms of relatively greater use of inputs. The cost incurred on purchased inputs other than chemical fertilizers is relatively higher in Sindh i.e 33 percent as compared to the Punjab. Similarly, irrigation water is also applied on higher side in Sindh (32 percent). The crop duration is longer in Sindh by 19 percent as compared to Punjab

Likely Price Policy Options

API conducted technical analysis for determining Indicative Price for Sugarcane 2018-19 Crop. Results of the analysis are briefly summarized in the table below:-

Indicative Price Policy Options Based on	Sugarcane Price at Mill-gate (Rs per 40 kgs)	
	Punjab	Sindh
1. Cost of production of sugarcane	165.89	171.04
2. Indicative price for 2018-19 crop assuming average wholesale prices of sugar:		
a) Rs 55000 per ton	125.54	130.55
b) Rs 60,000 per ton	136.95	142.42
c) Rs 65,000 per ton	148.37	154.29
3. Average price received by cane growers for 2017-18 crop	123	120
4. Import Parity based on average fob London price of white sugar at US \$ 371.92 (September 2018)	129.55	134.72
5. Export Parity based on: average fob London price of white sugar at US \$ 371.92 (September 2018)	94.19	97.95

Marketing of Sugarcane

Due to abrupt expansion in sugar industry has increased the demand of cane, resultantly, area under sugarcane, crop has increased to around 1.34 million hectare, highest in the history.

The expansion in area has affected the production of other crops particularly cotton. However such expansion may not be feasible to keep continue for a long time.

-Price/Supply of Sugarcane

During 2017-18, production of sugarcane reached at 83.33 million tonnes, which is all-time higher but growers have not received the announced/notified price. In Punjab, price ranged between Rs 90 to Rs 120 during the post harvest season. However, towards the end of season, the price was reported around Rs 160 per 40 kgs. In Sindh, all interventions of Chief Minister Sindh, the State Bank of Pakistan and Sindh High Court helped fixing the price of sugarcane at mill gate @ Rs 160/ 40 kgs. However, the farmers reported that the price they received in the range of Rs 110 to 130/ 40 kgs. In K.P, Rs 150 were paid to farmers against Rs 180 per 40 kgs at mill gate price of sugarcane fixed by the sugarcane price committee.

The prices of sugar crashed both in the domestic and international markets, adversely affecting the economics of sugarcane and its dependent sectors which resulted chaos in sugarcane and sugar sub-sectors, suffering the problems associated with over supply, surplus stocks of sugar, liquidity problems, and accumulated arrears of growers.

Contract between Farmers and Sugar mills

The sugar mills can enter into contract with the growers specifying the time of delivery and prices of cane. This will ensure staggered supply of cane to the mills. The millers are of the view that contract system cannot be successful unless both the growers and millers are bound by law to honor the contract. Contract between mills and groups/ cooperatives of growers should be convenient for all concerned. The provincial sugarcane commissioners should initiate proposals for legislation in consultation with growers and sugar mills

Due to shortage of canal water, farmers use underground water through tube-well which is costly due to high prices of diesel and ground water also reduces the per acre yield. The government should provide on subsidize loan facility for solar system for tube well and installations of new tube-well.

RECOMENDATION

In view of the problems faced by the growers as well as the sugar industry, the current policy of fixing the cane price by the provincial government needs to be reconsidered. The price of sugarcane once notified should be implemented with the technical consultation of the Federal Government.

In view of the economic factors analyzed in the report, the Ministry of National Food Security and Research may share its recommendation on the sugarcane price with the Provincial Governments for notification and implementation.

PRICE POLICY FOR SUGARCANE, 2018-19 CROP

INTRODUCTION

Sugarcane is the second largest and second most important cash crop of Pakistan. Cultivated over one million hectares, it occupies about 5 percent of the total cropped area. It's share in value added by major crops has ranged between 11-13 percent during the last five years. It also provides valuable by-product (sugarcane tops) as fodder for livestock. Sugar industry - the second largest agro-based industry of Pakistan comprising of more than 89 sugar mills depends on sugarcane farming for raw material. Located mainly in the countryside it provides not only employment opportunities for rural labour but also contributes to rural development through the provision of infrastructure and many other forward and backwards linkages. Moreover, sugarcane farming and sugar industry have significantly contributed to the public exchequer in the form of excise duty and other taxes. However, indiscriminate expansion in the sugar industry particularly towards cotton zone has not only led to uneconomic horizontal expansion in sugarcane cultivation on marginal lands but also posed a serious threat to the country's water resources and forex earnings from cotton crop.

2. For the last few years, the sugarcane and sugar sub-sectors have been in turmoil, suffering the problems associated with over supply, surplus stocks of sugar, liquidity problems, and accumulated arrears of growers. The prices of sugar crashed both in the domestic and international markets, adversely affecting the economics of sugarcane and its dependent sectors. The situation, however, has changed during the current year. Decreased cane production resulting in short supplies to the mills and rise in sugar prices in the international market may lead to higher prices of sugarcane and sugar in the domestic market.

3. The marketing of sugarcane particularly in the beginning of crushing season has been a nightmare for the farmers, involving long waiting at the mills, reduce weight of the produce at weighing bridge both at the purchase centers as well as in the mills, excessive deductions on account of trash contents and delayed payments forcing the growers to sell off the produce to the middlemen at throw away prices or selling CPRs at discounted prices.

4. In the global context, Pakistan ranks 4th in terms of acreage under sugarcane, 5th in terms of production and almost at the bottom in terms of per hectare yield. The analyses of economic indicators being discussed in this report suggest that horizontal expansion in cane production is neither desirable nor feasible particularly under sugar exporting scenario. However, there is a considerable scope for increasing cane production through improving the productivity of resources committed to its farming. Similarly, there exists a large potential for improving sugar recovery through improvement in the processing efficiency at the mills and cultivation of high sucrose varieties of cane. Efforts are also required to improve the efficiency of resources already committed to produce sugarcane and sugar so that cost of production of this farm enterprise could be reduced.

5. In view of the importance of sugarcane crop and sugar industry in the economy the problems confronting the farmers and industry need to be resolved through policy measures aimed at addressing the core issues of over/short supply of sugarcane, malpractices in its marketing, and disposal of sugar. Mostly, sugarcane is utilized for sugar production, but considerable quantity is also used in Gur making in the Punjab and the Khyber Pukhtunkhwa.

6. Sugarcane is an important major crop contributing 0.7 percent in overall GDP. According to crushing capacity, the investment in sugar industry is generates economic activities of diverse nature including sugar, bi-products, food for livestock, electricity, and raw material for paper and chipboard industry, molasses for ethanol industry etc in country. The bi- products especially, ethanol is a rich source of foreign exchange earnings through export. Despite all above mentioned facts and importance, the sugarcane and sugar industry always observed in turmoil. The relationship between a farmer and sugar mill owner always remaining in conflicting particularly, price of produce and weighment have been observed contrary to the benefit of each other. It is necessary to develop and implement a useful policy measure to bridge the gap between growers and sugar millers. To remove the chaos regarding price of sugarcane, a legal contract on pre-fixed price between growers and millers on agreed terms and conditions may be implemented as policy measure.

2. SUGARCANE PLANTING AND HARVESTING SEASONS

7. Sugarcane is a tropical crop which requires temperature more than 20°C for proper germination and growth and two months of dry and cool weather towards maturity. The climatic conditions in Pakistan generally provide a growing season of 8 to 10 months for sugarcane in a year. The recommended times of planting the spring and autumn crops of sugarcane, by province are given in Table-1.

Table-1: Planting and Harvesting Times of Sugarcane by Province

Province	Planting Time	
	Spring Crop	Autumn Crop
Punjab	15 th February to 3 rd week of March	September
Sindh	1 st February to 15 th March	September to 15 th October
NWFP	15 th February to 3 rd week of March	September
	Harvesting Time	
Punjab, Sindh, KPK	15 th October to 1 st March	

Source: Official correspondence with Sugarcane Coordinator, NARC, Islamabad.

3. PROVINCIAL SHARES

8. Provincial shares in area and production of sugarcane are discussed below:

3.1 Area and Production

9. Shares of area and production of sugarcane during the periods 2007-08 to 2009-10 and 2015-16 to 2017-18 and changes therein are presented in Table-2.

Table-2: Comparison of Provincial Shares in Area and Production of Sugarcane: 2007-08 to 2009-10 and 2015-16 to 2017-18

Country/Province	Area			Production		
	Average 2007-08 to 2009-10	Average 2015-16 to 2017-18	Change	Average 2007-08 to 2009-10	Average 2015-16 to 2017-18	Change
	----- Percent -----					
Pakistan	100.00	100.00	-	100.00	100.00	-
Punjab	65.38	63.46	-2.9	63.63	65.38	2.8
Sindh	25.10	26.19	4.3	27.92	25.22	-6.1
KPK	9.45	10.29	8.8	8.39	8.35	-0.5
Balochistan	0.06	0.06	-0.1	0.06	0.05	-23.5

Source: Worked out from Annex-I.

10. It is clear from Table-2 the Punjab, Sindh and KPK share 63.46, 26.19 and 10.29 percent in area and 65.38, 26.22 and 8.35 per cent in production respectively. Over time share of Punjab has reduced by 2.9 per cent in area but has increased by 2.8 per cent in production.

11. In case of Sindh both area and production has been increased by 4.3 and 6.1 per cent. As far as in KP is concerned despite of increase in area of 8.8 per cent production has decreased slightly by 0.5 per cent of increase

4. IMPORTANT SUGARCANE PRODUCING DISTRICTS

12. Sugarcane is a high delta crop which grown in irrigated conditions. Districts which grow 100 thousand tonnes of sugarcane are R.Y.Khan, Faisalabad, Muzaffargarh, Sargodha, Jhang, Rajanpur, Chiniot, T.T.Singh, Bahawalpur, Bhakkar, Kasur, M.B.Din, Vehari, Bahawalnagar, Nankana Sahib, Layyah, Okara, Khanewal, Khushab, D.G.Khan, Sahiwal, Hafizabad, Multan, Pakpattan, Mianwali, Sheikhpura and Lodhran, in the Punjab; Badin, Thatta, Nawabshah, Tando Muhammad Khan, Ghotki, N.Feroze, Mirpur Khas, Tando Allahyar, Khairpur, Sanghar, Matiari, Hyderabad, Sukkur, Dadu, and Umerkot from Sindh; Charsadda, Mardan, D.I.Khan, Peshawar, Nowshera, Malakand and Swabi from KP. These 49 districts; 27 from the Punjab, 15 from Sindh and 7 from KP collectively account for 99 per cent of the sugarcane area and production (Annex-III).

13. However, 24 districts, namely, R.Y.Khan, Faisalabad, Muzaffargarh, Sargodha, Jhang, Rajanpur, Chiniot, T.T.Singh, Bahawalpur, Bhakkar, Kasur, M.B.Din, Vehari, Ghotki, Badin, Thatta, Nawabshah, Tando Muhammad Khan, N.Feroze, Mirpur Khas, Tando Allahyar, Khairpur, D.I Khan, Charsadda and Mardan collectively produce 82 per cent of the total sugarcane produced in the country.

5. CHANGES IN AREA, YIELD AND PRODUCTION

14. During the decade ending 2017-18 area under sugarcane at country level ranged between 2329.8 and 3315.7 thousand acres, production ranged from 49.373 to 83.333 million tonnes and yield ranged between 19.67 to 25.13 tonnes per acre (Annex-II).

FIG-1: SHARES IN AREA

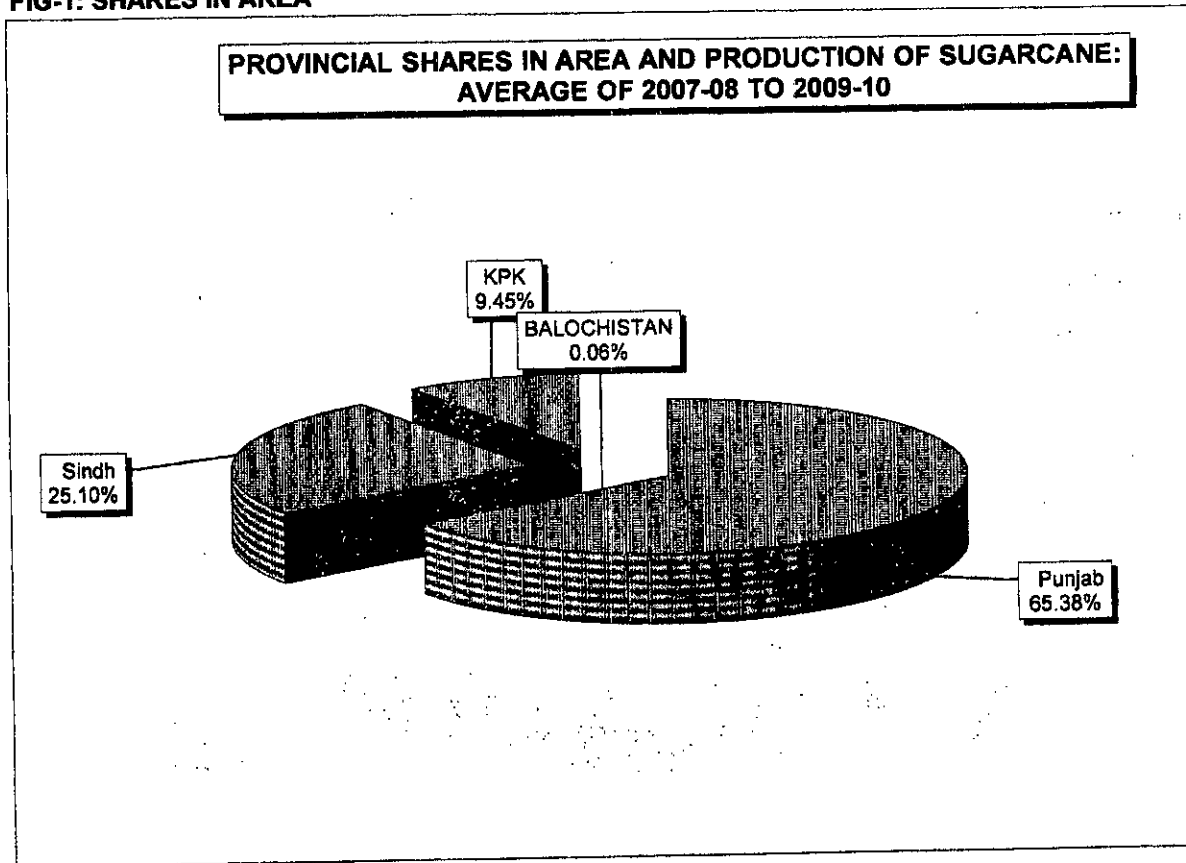
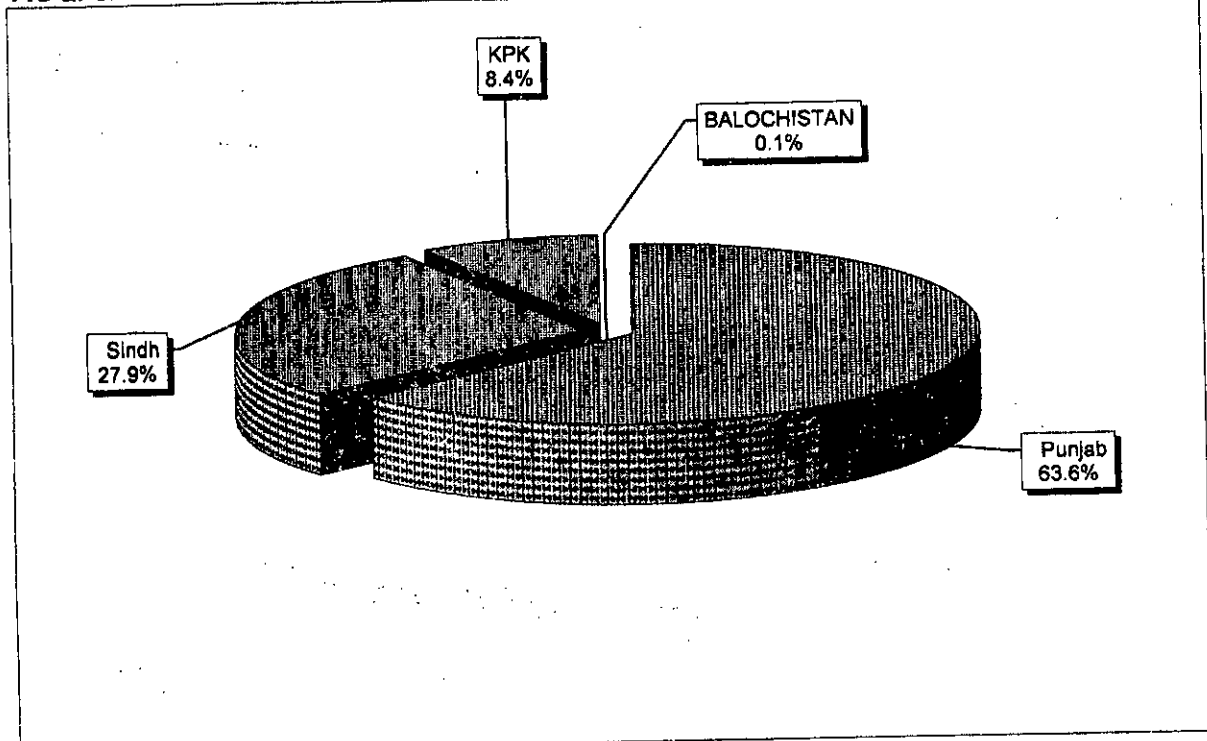


FIG-2: SHARES IN PRODUCTION



SOURCE: TABLE-2

FIG-3: SHARES IN AREA

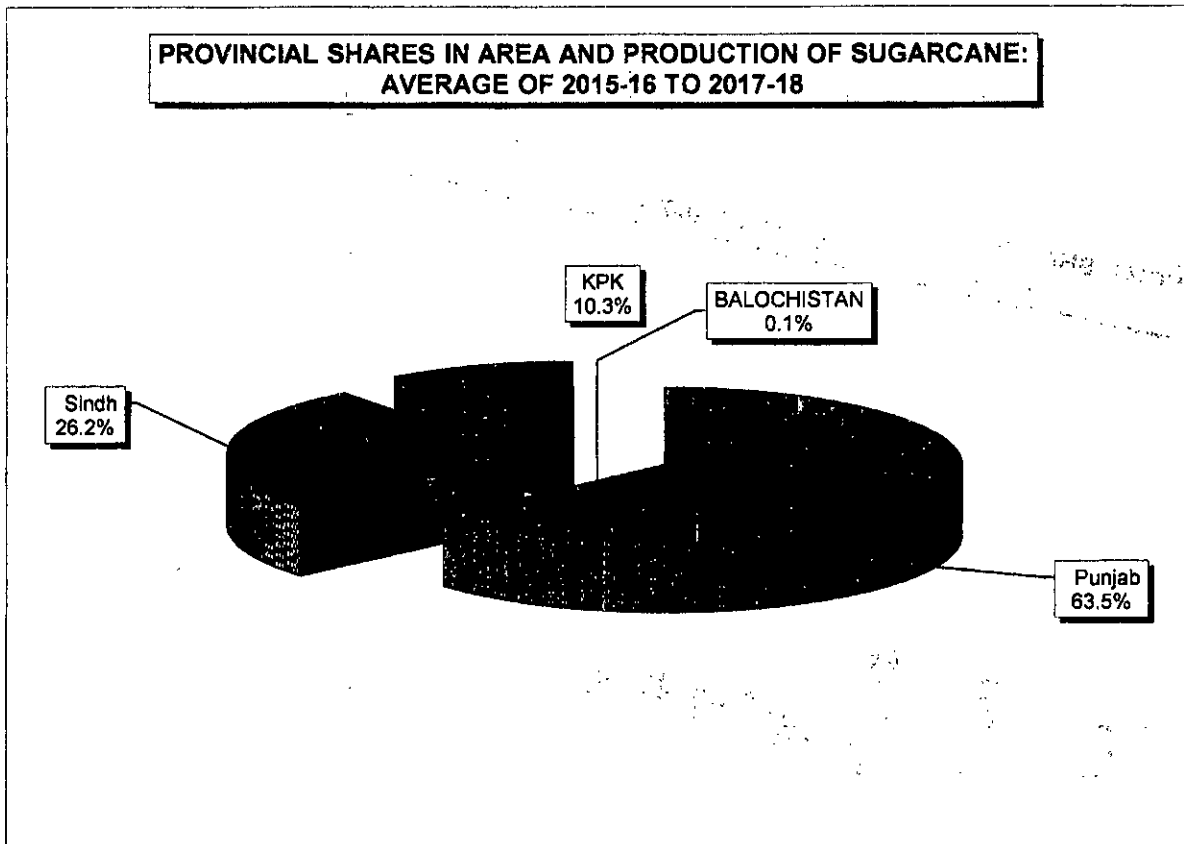
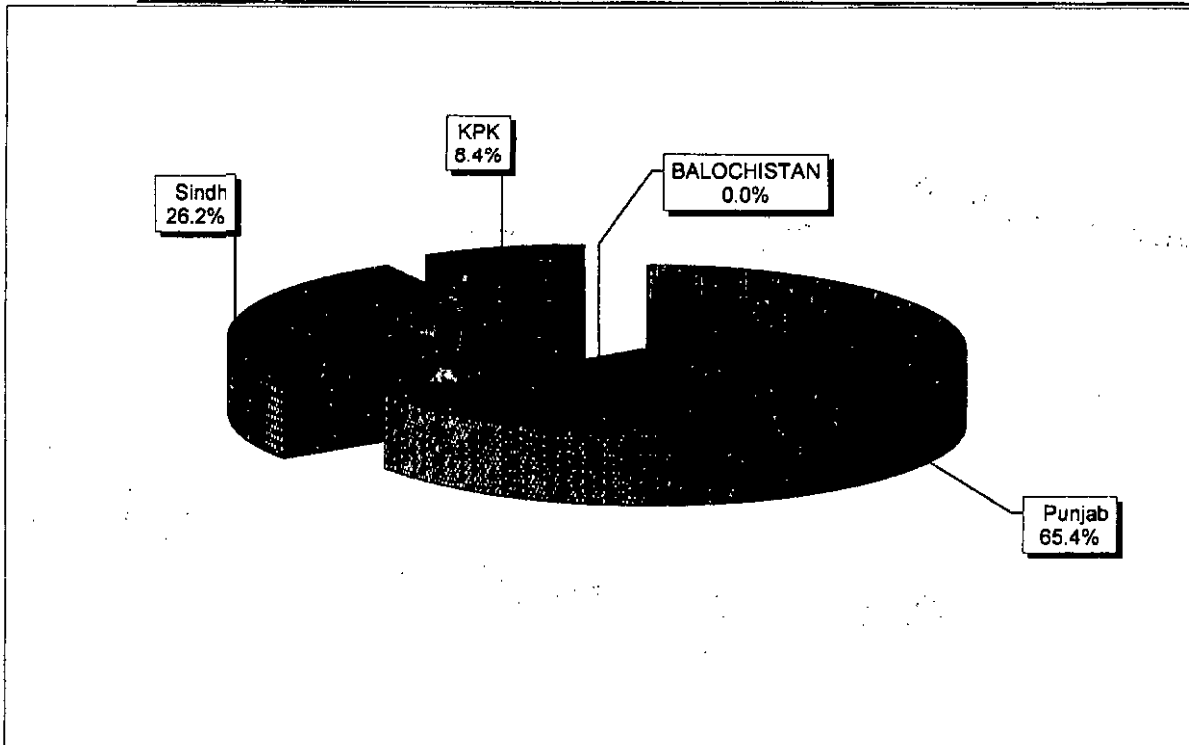


FIG-4: SHARES IN PRODUCTION



SOURCE: TABLE-2

15. Long-term and short-term changes in area, yield and production of sugarcane are discussed below:

5.1 Long-term Changes: 2007-08 to 2017-18

16. During the above referred period sugarcane production in Pakistan increased @ 3.9 per cent per annum mainly due to improvement in yield @ 2.0 per cent and area expansion @ 1.8 per cent (Table-3).

Table-3: Average Annual Growth Rate of Area, Yield and Production of Sugarcane: 2007-08 to 2017-18

Country/Province	Area	Yield	Production
	Percent per annum		
Pakistan	1.8	2.0	3.9
Punjab	1.2	2.8	4.0
Sindh	2.9	0.7	3.6
KP	3.2	1.0	4.2
Balochistan	2.3	-1.2	1.1

Note: The growth rates have been worked out by estimating the equation, $Y = (1+r)^x$, (OLS) from the data given in Annex-I.

17. Sugarcane production in Punjab during the period under reference has increased @ 4.0 percent per annum, as a result of 2.8 per cent improvement in yield and 1.2 per cent expansion in area. Sugarcane production in Sindh has also increased @ 3.6 per cent due to 2.9 % increase in area and 0.7 per cent improvement in yield.

18. In KP sugarcane production also increased @ 4.2 per cent per annum. This is mainly attributed to 3.2% increase in area and 1.0% improvement in yield.

5.2 Short-term Changes: 2016-17 and 2017-18 Crops

19. According to final estimates of Provincial Agriculture Departments (Crop Reporting Service) sugarcane production at country level for 2017-18 crop is reported at 83.333 million tonnes reflecting an increase of 10.4 percent over last year production of 75.482 million tonnes.

Increase in production is mainly due to 10.2% expansion in area and 0.2% improvement in yield (Table-4).

Table-4: Area, Yield and Production of Sugarcane: 2016-17 versus 2017-18 Crops

Country/ Province	Area		Changes	Yield		Changes	Production		Changes
	2016-17	2017-18		2016-17	2017-18		2016-17	2017-18	
	000 ha		Per cent	tonnes per ha		Per cent	000 tonnes		Per cent
Pakistan	1217.6	1341.8	10.2	62.0	62.1	0.2	75482.2	83332.8	10.4
Punjab	777.8	859.1	10.5	63.8	64.1	0.5	49613.0	55067.5	11.0
Sindh	320.5	333.3	4.0	63.1	61.8	-1.9	20208.9	20611.9	2.0
KP	118.6	148.5	25.2	47.5	51.2	8.0	5628.7	7610.0	35.2
Balochistan	0.7	0.86	22.9	45.1	50.5	11.8	31.6	43.4	37.3

Source: Annex-I.

20. Sugarcane production for 2017-18 in Punjab is reported at 55.068 million tonnes which shows an increase of 11.0 percent over the last year. The increase mainly happened due to 10.5 and 0.5 per cent increase in area and yield respectively.

21. Similarly production from Sindh during 2017-18 also increased by 2.0% over the previous year (from 20.209 to 20.612 million tonnes) Thus escalation is attributed mainly to 4.0 per cent expansion in area.

22. In KP, production increased by 35.2 per cent due to 25.2 per cent increase in area and 8.0 per cent in yield.

23. Balochistan production increased by 37.3 per cent due to 22.9% increase in area and 11.8 per cent increase in yield.

6. TARGETS VS ACHIEVEMENTS: 2017-18 CROP

24. The Federal Committee for Agriculture (FCA) fixed sugarcane production target for 2017-18 crop at 68.518 million tonnes. As per final estimates of the Provincial Agriculture Departments sugarcane production from 2017-18 crop is reported at 83.333 million tonnes (21.5

per cent more than the target) mainly due to achievement in 15.3 per cent in area and 5.5% in yield (Table-5). All precious have surpassed area and product on targets especially KPK has increased areas by 28.6 per cent and yield by 8 per cent.

Table-5: Targets and Estimated Achievements of Area, Yield and Production of Sugarcane: 2017-18 Crop

Country/ Province	Area		Deviation from the target	Yield		Deviation from the target	Production		Deviation from the target
	Target	Achieve- ment		Target	Achieve- ment		Target	Achieve- ment	
	-- 000 hec --		Per cent	Tonnes/hec		Per cent	-- 000 tonnes --		Per cent
Pakistan	1164.2	1341.8	15.3	58.9	62.1	5.5	68517.8	83332.8	21.6
Punjab	728.0	859.1	18.0	60.4	64.1	6.1	44000.0	55067.5	25.2
Sindh	320.0	333.3	4.2	59.4	61.8	4.2	19000.0	20611.9	8.5
KPK	115.5	148.5	28.6	47.5	51.2	8.0	5482.8	7610.0	38.8
Balochistan	0.7	0.86	22.9	50.0	50.5	0.9	35.0	43.4	24.0

- Sources:** 1. For targets: Targets have been fixed by FCA, NFS&R, Islamabad
2. For achievements: Annex-I.

7. COST OF PRODUCTION

25. For making indicative price proposal for sugarcane, cost of production constitutes basic criterion. Cost of production (COP) is determined by multiplying input dosage or no. of time a cultural operation is made with their prices. Cost of production of sugarcane for 2018-19 crop in Punjab and Sindh provinces is estimated by using the API latest field survey data. These data include variables like input use levels, cultural operations, prices of inputs and rates of different cultural operations prevailing at the time of survey at the village level in survey districts of Punjab and Sindh.

26. It is worth mentioning here that till 2017-18 cost of production of sugarcane was based on the field data collected by Agricultural Prices Commission (old nomenclature of Agriculture

Policy Institute) in 1999-2000. From 1999-2000 onward till 2017-18 Agriculture Policy Institute continuously used dosage of different inputs applied and number of cultural operations like numbers of ploughings, plankings, hoeings, numbers of sprays and irrigations etc. as these were reported by farmers during the 1999-2000 field survey.

27. As production technology of crops changes every five years or so therefor 2018-19 crop fresh data were collected on these variables. Cost of production estimated on the basis of these data are described in the following paragraphs:

28. Average farmer cost of production of sugarcane – 2017-18 and 2018-19 crops

29. Cost of production of 2017-18 and 2018-19 crops in Punjab and Sindh provinces is separately summarized in Table- 6 and Table-7.

Table-6 Average farmer cost of production of sugarcane in Punjab

Item	Unit	2017-18	2018-19	Increase in 2018-19 over 2017-18
1. Cost of cultivation (inclusive land rent)	Rs./ acre	80717	105787	25070
2. Yield (40 Kgs)	40 Kg/ acre	600	659.5	59.5
3. Cost of production at farm level				
a) With land rent	Rs./ 40 Kg	134.53	160.41	25.88
b) Without land rent	Rs./ 40 Kg	91.20	119.34	28.14
4. Marketing cost	Rs./ 40 Kg	17.00	17.50	0.50
5. Cost of production at market/ procurement centre level				
a) With land rent	Rs./ 40 Kg	151.53	177.91	26.38
b) Without land rent	Rs./ 40 Kg	108.20	136.84	28.64

Source- Annex-IV.

- Punjab

30. The expected cost of production of one acre of sugarcane in Punjab during 2018-19 crop year is likely to be Rs 105,787 (inclusive land rent). This is Rs 25,070 more than the corresponding cost of production for 2017-18. There are two reasons for it: first, 2017-18 COP was based on 2003-04 field data. Being old data set, it was revised during 2018. In this field survey, data of input use levels i.e fertilizer, tractor operations, seed rate, no. of sprays, hoeings and labour use were collected afresh. This lead to a fundamental change in costs of these items. Second, prices of different traded inputs, like cost of tractor run operations and labour wage rate, every year change. Thus cost of production (COP) at the farm gate with 659.5 Manuds avergae yield per acre turns out to be Rs 160.41/40 Kg. Adding marketing expenses @ Rs 17.5/40 Kg, mill gate COP comes to Rs 177.91 which is higher by Rs 26.38/40 Kg than the corresponding COP of 2017-18 (Rs 151.53).

- Sindh

31. Cost of production per acre of sugarcane at the farm gate in Sindh for 2018-19 crop season is likely to be Rs 109495/acre (inclusive land rent). Keeping average yield of 700 maund/acre, COP at the farm level comes to Rs 156.42/40 Kg. Adding marketing cost @ Rs 17.5/40 Kg, cost per 40 kg of producing and selling sugarcane at the mill gate would be Rs 173.92/40 Kg. This cost is Rs 25.9/40 Kg higher than the corresponding cost Rs 148.02/40 Kg during 2017-18 crop season.

Table-7: Average farmer cost of production of sugarcane in Sindh: 2017-18 and 2018-19 crops

Item	Unit	2017-18	2018-19	Change in 2018-19 over 2017-18
1. Cost of cultivation (inclusive land rent)	Rs./ acre	99522	109495	9973
2. Yield (40 Kgs)	40 Kg/ acre	750	700	-50
3. Cost of production at farm level				
c) With land rent	Rs./ 40 Kg	132.70	156.42	23.72
d) Without land rent	Rs./ 40 Kg	96.58	116.18	19.60
4. Marketing cost	Rs./ 40 Kg	15.32	17.50	2.18
5. Cost of production at market/ procurement centre level				
a) With land rent	Rs./ 40 Kg	148.02	173.92	25.9
b) Without land rent	Rs./ 40 Kg	111.90	133.68	21.78

Annex-V**7.1 Cost of major farm inputs and operations**

32. A comparative account of cost of major production operations involved in sugarcane for 2017-18 and 2018-19 crops in Punjab and Sindh provinces are presented in Table- 8 & Table-9.

- Punjab

33. Decomposition of cost of production of 2018-19 into its constituents hardly indicate that during 2018-19 in Punjab major cost item is likely to be land rent accounting for about 26% followed by fertilizer cost 19.35 % . Third major cost item would be seed and sowing cost 12.76 % followed by harvesting, stripping, binding and loading charges which will be 12.47 % . 'Other costs' excluding tractorization and tube well irrigation cost make 10.62. %. This implies that maximum of the cost of production of sugarcane ascribes to land rent and labour costs because in the 'other costs' including FYM category, labour includes management charges, manual hoeing, pesticides, fertilizer application and cane transportation costs which are beyond the scope of government policy because these are determined by the open market forces. Government may only affect diesel and tube well electricity tariff rate for irrigation tube wells.

34. It may be inferred from this analysis that cost of production of sugarcane is basically determined by the open market forces which put considerable hardship to the cane growers in growing this crop.

Table-8 : Component-wise Cost of Production of Sugarcane in Punjab: 2017-18 and 2018-19 Crops

S. No	Inputs/ operations	2017-18	2018-19 crop	As % of Gross cost
	Rs./ acre.....		
	PUNJAB			
1	Land preparation	7407	7544	7.13
2	Seed bed preparation	814	1600	1.51
3	Seed and sowing operations	8820	13500	12.76
4	Irrigation	5349	7110	6.72
5	Interculture	2097	1800	1.7
6	Plant protection	351	2250	2.13
7.	Farm Yard Manure	3625	1213.3	1.15
7	Fertilizers	7266.1	19261.3	18.21
8	Land rent	26000	27083	25.6
9	Harvesting, stripping, binding and loading charges	8316	13190	12.47
10	'Other cost'	10672	11235.3	10.62
	Gross cost	80717	105787	100.0

- Sindh

35. Like Punjab, major cost item for 2018-19 crop in Sindh is also likely to be land rent which will be counting 25.72 % in total cost of production. Next to that is seed and sowing operations which accounts for 18 % followed by fertilizers (including FYM) carrying a bout 15.22% of the cost of production of sugarcane. From the remaining cost items, harvesting, stripping, binding and loading charges make 10.87 % of the cost of production. All of the other costs would cumulatively make approximately 30% of the gross cost of production for 2018 -19 crop.

Table-9: Component-wise Cost of Production of Sugarcane in Sindh: 2017-18 and 2018-19 Crops

S. No	Inputs/ operations	2017-18	2018-19	As % of Gross cost
		Crop	crop	
	Rs./ acre.....		
	SINDH			
1	Land preparation	8,151	7,954	7.26
2	Seed bed preparation	2,183	2,200	2.01
3	Seed and sowing operations	14,756	19,698	17.99
4	Irrigation	3,201	3,091	2.82
5	Interculture	4,541	5,960	5.44
6	Plant protection	510	2,046	1.87
7	Fertilizers including FYM	13,842	16,662	15.22
8	Land rent	27,083	28,167	25.72
9	Harvesting, stripping, binding and loading charges	12,000	11,900	10.87
10	Others	13,255	11,817	10.79
	Gross cost	99,522	109,495	100.0

8. NOMINAL AND REAL INDICATIVE / MARKET PRICES OF SUGARCANE

36. The Real price of a commodity is the price achieved by removing the inflationary effect from its nominal price. The resultant price of that commodity reflects its real value. It represents increase or decrease in purchasing power of the respective commodity against the base year level. In the following text, an analysis of the indicative and market prices of sugarcane has been carried out. This analysis is based on the prices of sugarcane during 2010-11 to 2017-18. Discussing below indicates the province-wise trends in nominal and real terms.

8.1 Nominal and Real Indicative and Market Prices of Sugarcane in Punjab

37. The analysis of indicative and market prices of sugarcane for the Punjab province during 2010-11 to 2017-18 is given in the Table-10.

Table -10: Nominal and Real Indicative & market Prices of sugarcane Realized by the Growers in the Punjab: 2010-11 to 2017-18

Crop year	Nominal Prices		Consumer Price Index (CPI)	Real Prices	
	Indicative *	Market **		Indicative	Market
	--- Rs per 40 kgs ---		2007-08=100	--- Rs per 40 kgs ---	
1	2	3	4	5=(2/4)x100	6=(3/4)x100
2010-11	125	175	146.45	85.35	119.49
2011-12	150	148	162.57	92.27	91.04
2012-13	170	170	174.53	97.40	97.40
2013-14	170	170	188.07	90.39	90.39
2014-15	180	180	197.74	91.03	91.03
2015-16	180	180	202.73	88.89	88.89
2016-17	180	180	211.57	85.07	85.07
2017-18	180	145	219.01	82.18	66.20

Notes: * Indicative price of sugarcane at mill-gate fixed by the Provincial Government.
 **Prices of sugarcane actually realized by the growers reported during the API's field survey.

Sources: - 1. Price Policy Report for Sugarcane by API (various issues).
 2. Pakistan Economic Survey, 2017-18.

38. The nominal indicative price of sugarcane in the Punjab increased by 44 per cent from Rs 125 to Rs 180 per 40 kgs between 2010-11 and 2017-18. During the analysis period, the Consumer Price Index (CPI), the most commonly used measure of inflation in the economy, escalated by 49.54 per cent. A consistent growth is observed in real indicative prices of sugarcane upto 2012-13. However, the real prices subsequently declined on an irregular pattern. For the last year 2017-18, real indicative price of sugarcane works out at Rs.82.18 per 40 kgs. The lowest during the period under review. The real indicative price was lower than the nominal price since 2010-11 mainly for higher CPI prevailed during the period.

39. As far as the nominal market price of sugarcane is concerned, it has declined from Rs.175 per 40 kgs in 2010-11 to Rs. 148 per 40 kgs in 2011-12. However, the price increased to Rs 170 per 40 kgs in 2013-14 and continues further in the 2014-15 reached Rs 180/ 40 kg in 2016-17. The market price again declined abruptly to Rs 145 per 40 kgs in 2017-18. The real market price not only showed a volatile pattern and remained below the nominal market price during the period under review, but also reflected that growers have been getting much lower in real terms due mainly for the consecutive increase in the CPI during the period under reference.

8.2 Nominal and Real Indicative Prices of Sugarcane in Sindh

40. The nominal and real indicative and market prices of sugarcane in Sindh for the period 2010-11 to 2017-18 are displayed in Table-11.

41. Nominal indicative prices in Sindh increased from Rs 125 per 40 kgs in 2010-11 to Rs 181 per 40 kgs in 2017-18. This counts to 44.8 per cent increase in the indicative price over the period. The market price usually remained higher or equal to the indicative price except in 2013-14 and 2017-18, when it fell against the indicative price. It proves that indicative price of sugarcane is not a distortion in the market conditions. Real indicative price of sugarcane during the period under study experienced a trend of jumps and fall starting from the lowest level of Rs 85.35 per 40 kgs in 2010-11 to the highest level of Rs. 98.55 in 2012-13. However, it declined to Rs.82.18 per 40 kgs in 2017-18. The lowest in the entire period under review.

Table-11: Nominal and Real Indicative & Market Prices of Sugarcane Realized by the Growers in Sindh: 2010-11 to 2017-18

Crop year	Nominal Prices		Consumer Price Index (CPI)	Real Prices	
	Indicative*	Market**		Indicative	Market
	---- Rs per 40 kgs ----		2007-08=100	---- Rs per 40 kgs ----	
1	2	3	4	5=(2/4)x100	6=(3/4)x100
2010-11	125	185	146.45	85.35	126.32
2011-12	154	154	162.57	94.73	94.73
2012-13	172	174	174.53	98.55	99.70
2013-14	172	169	188.07	91.46	89.86
2014-15	182	180	197.74	92.04	91.02
2015-16	172	191	202.73	84.94	94.21
2016-17	182	182	211.57	86.02	86.02
2017-18	181	130	219.01	82.18	59.35

Notes: * Indicative price of sugarcane at the mill gate fixed by the Provincial Government.
** Prices of sugarcane actually realized by the growers collected through the API field survey.

Sources: - 1. Price Policy Report for Sugarcane by API (various issues).
2. Pakistan Economic Survey, 2017-18.

42. As far as the nominal market price of sugarcane is concerned, it declined gradually from Rs.185 per 40 kgs in 2010-11 to Rs 169 per 40 kgs in 2013-14 but increased again in 2015-16 to Rs 191 per 40 kgs mostly in upper Sindh, However, in 2017-18 the nominal price again decreased as Rs.130 per 40 kgs. The real market price shows also a depressing situation which remained below the nominal market price throughout the period, under review. It is clear from Table-11 above that the changes in indicative and real prices of sugarcane seem responsive to the inflationary trend.

43. It may be observed from the above data that CPI consistently increased during the reference period. Nominal prices have also evidenced a continuous improvement. One striking feature of market prices is that it fell by 29 per cent in 2017-18 as compared to 2016-17 which reflects that market is not perfect and the growers may face a higher risk factor for losing returns from their produce.

8.3 Gains from Sugarcane Cultivation in Real Terms

44. The real indicative price has remained lower than the nominal indicative price since 2010-11 onwards both in the Punjab and Sindh. The major factor for this mismatch between the nominal and the real price is attributed to the higher CPI which has been increasing constantly, thus pushing the real value/returns to a lower level. This indicates that sugarcane farmers have been getting less in real terms from the crop.

45. It may be concluded that indicative and market prices of sugarcane almost follow the same pattern which visibly implies successful implementation of indicative price of sugarcane. However, field evidence does not support such interpretation as a number of factors have been reported to disrupt the market and the price actually received by the sugarcane growers. The indicative price is to play its envisaged role of stabilizing the prices of the commodity and to ensure fair remuneration to the producer and enabling them to stay in the enterprise and contribute to the economy.

9. COMPARATIVE ECONOMICS OF SUGARCANE AND COMPETING CROPS

46. Resource allocation among the competing enterprises is primarily governed by the economic considerations reflected in their gross cost, gross income, gross margin, net income, output-input ratio, etc.

47. Sugarcane is planted in the irrigated regions of the country and being an annual crop, it competes for land, water and other farm resources with both 'kharif' and 'rabi' crops. Economics of sugarcane and competing crops/ crop combinations has been analyzed in terms of output prices received by growers and input prices paid by growers during the 2017-18 crop year. Detail of the analysis is presented for the Punjab and Sindh provinces in Annex- VI. A summary of analysis against various economic indicators is provided in Table-12 and Table-13 and results of the analysis are briefly discussed in the following paragraphs.

Table - 12: Economics of Sugarcane and Competing Crops at Prices Realized by the Growers for 2017-18 crop in Punjab Province

Competing crops/ combinations	Output/ input ratio	Gross revenue per		
		Rupee of purchased inputs cost	Day of crop duration	Acre inch of irrigation water used
----- Rupees -----				
1. Sugarcane	1.18	5.12	238	1953
2. Cotton + wheat	1.13	3.73	247	3054
3. Cotton + sunflower	1.10	3.09	255	2432
4. Basmati + wheat	1.09	3.00	256	1316
5. Basmati+ sunflower	1.07	2.54	265	1191
6. IRRI + wheat	1.00	2.92	222	1080
7. IRRI + sunflower	0.98	2.43	231	989

Source: Annex-VI

Punjab

48. The Table- 12 above indicates that growers' returns to overall investment based on the indicative price announced by the provincial government i.e Rs 180/40 kgs, remained higher for sugarcane, which performed better than the entire crop combinations. None of the combinations

could compete with Sugarcane in terms of returns to purchased inputs. Similarly, Sugarcane also out-competed both Basmati and IRRI combinations in terms of irrigation water. However, cotton + wheat and cotton + sunflower rotations performed better than sugarcane in this indicator. Similarly, in terms of returns to crop duration both cotton and Basmati combinations performed better than sugarcane in Punjab, significantly. IRRI combinations remained far below again the sugarcane in terms of entire criteria analyzed in this case.

49. However, sugarcane farmers were reported facing hardships in disposing off their produce at indicative prices. The farmers have been receiving prices much below the indicative prices which were hovering around Rs 150/40 kgs. On these prices, the situation goes in disfavor of sugarcane farmers with losing to all the crop combinations especially in terms of returns to overall investment (0.98) and crop duration (194). The Government and the Courts of Law have been intervening at various levels for resolving the issue.

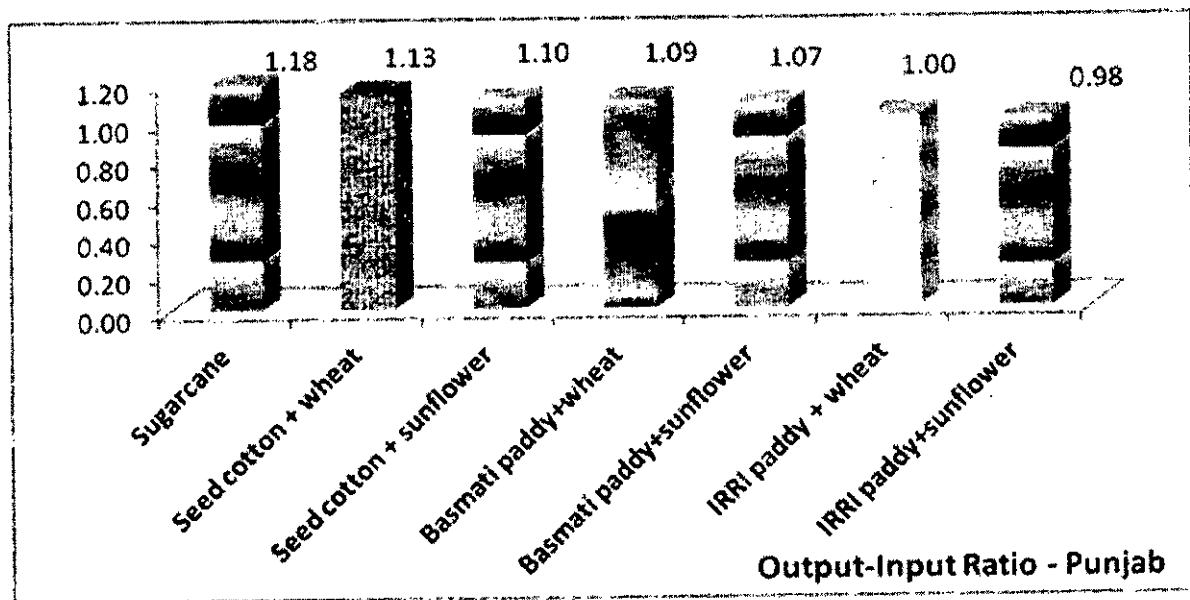


Fig- 1: Output-Input Ratio of Sugarcane in Punjab

Sindh

50. Sugarcane growers, in Sindh too, have been largely reported receiving the prices lower than the indicative price announced for the year 2017-18. Presuming that the farmers received the indicative price, the analysis presents a favourable situation for Sugarcane performing better

than the competing crops, especially in terms of output-input ratio and returns to purchased inputs.

Table - 13 : Economics of Sugarcane and Competing Crops at Prices Realized by the Growers for 2017-18 Crop in Sindh

Crop/ crop combination	Output-input ratio	Gross revenue per		
		Rupee of purchased inputs' cost	Day of crop duration	Acre inch of irrigation water used
		----- Rupees -----		
1. Sugarcane	1.17	4.61	246	1689
2. Cotton + wheat	1.25	4.20	274	3841
3. Cotton + sunflower	1.05	3.77	246	2584
4. IRRI + wheat	1.20	3.84	246	1303
5. IRRI + sunflower	0.96	2.63	213	983

Source: Annex-VI

51. In terms of returns to crop duration, sugarcane performed low against cotton + sunflower and at par with cotton+sunflower and IRRI + Wheat combinations. Similarly, Sugarcane performed better than IRRI combinations in terms of returns to irrigation water, but its performance remained low against cotton combinations. However, if the analysis is carried out based on the actual prices received by the sugarcane growers (Rs 140/40 kgs), the crops's performance drops to the lowest against all the crop combinations, particularly in terms of returns to overall investment (0.88) and crop duration (184) and others as well.

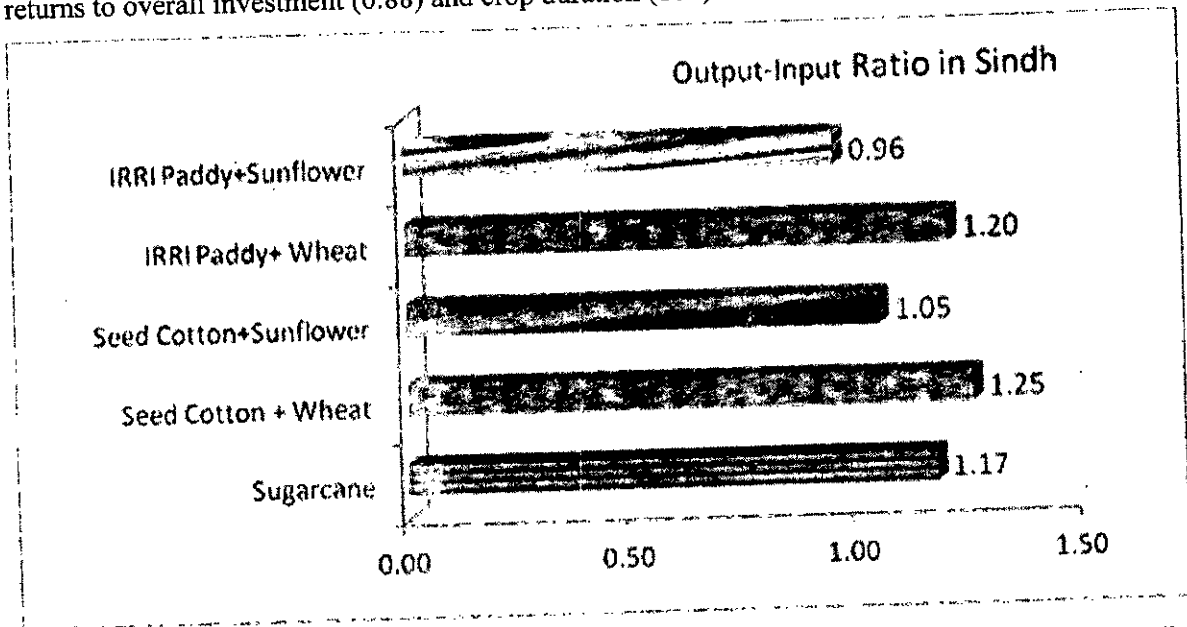


Fig- 2 : Output-Input Ratio of Sugarcane in Sindh

9.1 Economics of Sugarcane: Inter Provincial Comparison

52. In view of its longer duration, sugarcane crop in the Sindh province requires more water and other inputs as compared to Punjab.

53. The higher yield of Sindh by 16 percent over Punjab may be explained in terms of relatively greater use of inputs. The cost incurred on purchased inputs other than chemical fertilizers is relatively higher in Sindh i.e 33 percent as compared to the Punjab. Similarly, irrigation water is also applied on higher side in Sindh (32 percent). The crop duration is longer in Sindh by 19 percent as compared to Punjab.

54. Chemical fertilizers are used on higher side in Sindh by 46 per cent in nitrogenous and by 13 per cent in phosphatic ingredients.

**Table-14: Input Use Level and Yield of Sugarcane in Sindh Vs Punjab:
2017-18 Crop**

Item	Unit	Sindh	Punjab	Difference of the Sindh province over Punjab (%)
Crop duration	Crop day	488	394	19
Irrigation water	Acre inch	71	48	32
Purchased inputs other than fertilizer	Rs./ acre	15149	11411	33
Fertilizer Use:				
• N	Nutrients kg/acre	104	56	46
• P	"	39	34	13
Crop yield	40 kg/acre	676	565	16

10. IMPACT OF INCREASE IN SUGAR PRICE ON CONSUMER PRICE INDEX (CIP)

55. Sugar is one of the important items in average household budget. Sugar is also included in the basket of goods used in estimating the Consumer Price Index (CPI). Any change in sugar price affects the household budget and CPI. The impact of change in the price of sugar has been worked out against the CPI and annual expenditure and summary of the results is given in Table-15

10.1 Impact on CPI

56. The changes in CPI as the result of increase in sugar price over the base price is give in Table-15.

Table-15: Impact of Increase in Sugar Price on CPI and Household Expenditure

Sugar price	Rise in CPI	Increase in annual expenses on the basis of average per capita sugar availability @ 23.98 kgs per year	
		Per person	Per household
Rs per kg	Per cent	----- Rupees -----	
56.91* Base price			
57.91	0.0409	23.98	151.31
58.91	0.0572	47.96	302.62
59.91	0.0490	71.94	453.94
60.91	0.0735	95.92	605.25
61.91	0.1061	119.90	756.5
62.91	0.1224	143.88	907.88
63.91	0.1387	167.86	1059.1
64.91	0.1549	191.84	1210.5
65.91	0.1712	215.82	1361.8

Note: * Price for the month of April 2018 was Rs 56.91 per kg
Average size of household comprises 6.31 members

Sources:

1. Pakistan Bureau of statistics (PBS), Islamabad

57. It is evident from the Table-15 that every increase of Rs 1 per kg over the base price of Rs 56.91 per kg is expected to raise the CPI by 0.0409 per cent, other things remaining the same.

Accordingly, the CPI is likely to increase by 0.0572 and 0.1061 per cent, if sugarcane price is increased by Rs 2 and Rs 5 per kgs.

10.2 Impact on Household Expenditure

58. According to the Household Integrated Economic Survey (HIES) 2015-16. The average household in Pakistan consists of 6.31 members. The annual per capita availability of sugar based on the Balance Sheet Method has averaged at 23.98 kgs per annum. The impact of selected increases in sugar price on the average Household Expenditure has been presented in table-15 above. It may be seen that every increase of Rupee 1 in sugar price over the base level of 56.91 per kg would raise the CPI by 0.0409 per cent. In addition, the per head and average household expenditure would increase by Rs 23.98 and Rs 151.31, respectively per annum with rise in sugar price by Rupee 1 per kg, other things remaining the same. Accordingly, an increase of Rs 2 and Rs 5 over the base level would increase the per head expenditure by Rs 47.96 and 119.90 per annum and average house expenditure by Rs 302.62 and Rs 756.5 per annum.

11. ECONOMIC EFFICIENCY IN SUGARCANE PRODUCTION

59. Role of domestic input/ output policies in crops' profitability and competitiveness is considered very important in allocating land, labour and capital to different crops. Efficiency of input/ output policies is normally studied through Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC) and Domestic Resource cost coefficient (DRC).

60. In the following paragraphs, resource use efficiency in sugarcane production is assessed in terms of these variables. Purpose of the analysis is to create a policy argument for allocating appropriate area and other resources to sugarcane crop. The analysis is carried separately both under import and export scenarios.

11.1 Import scenario analysis

11.1.1 Nominal Protection Coefficients (NPCs)

61. NPC is the ratio of the domestic market price to the social price of a commodity. It examines the impact of domestic market price of a crop ignoring distortions in the input prices.

As a rule of thumb if NPC is greater than one it means that local producers are protected through produce/ output pricing policy. If it is less than one, it implies implicit taxation to growers rather than protection to them. Implicit taxation to a crop means outflow of resources from that crop.

62. Empirical estimates of NPCs for sugarcane are provided in Table-16 below.

63. Before describing Nominal Protection Coefficients (NPCs) under import scenario it seems pertinent to refer to fundamental procedures of deriving equivalent price of sugarcane - which local sugarcane growers would get in Pakistan.

64. Equivalent international price here means parity price worked back on the basis of international market price. In other words, this will be the price sugarcane growers will get in the domestic market if domestic price of sugar is equal to the price of sugar in the international market.

65. Under import scenario we calculate this price by converting cif (international price) at Karachi port into domestic currency and then by adding port handling charges and other incidentals to it to shift imported sugar to sugarcane producing districts of Punjab and Sindh. For estimating equivalent price of cane in both Punjab and Sindh, same international price is used, however, domestic transport and other relevant charges would be different for each of the Province.

66. It is observable from data produced in Table-16 that most of the time NPCs for sugarcane have been greater than one during the period under analysis. It implies that sugarcane growers are receiving relatively higher price for their cane than the corresponding parity price.

67. Indicative price of sugarcane in Punjab is Rs. 180/ 40 Kg while it is Rs. 182/40 kg in Sindh. Sugarcane growers face a lot of problem in disposing off their cane at these prices. However, at the same time they are unable to get on-spot payment for their consignments rather they have to wait for longer time. They get their payments with a lot of delay. In view of these delays normally they prefer to sell their produce to the middlemen who offer them cash payment

for some amount of commission – informally agreed by the middleman and the grower. Field evidence suggests that it is around 15%. Thus they have to sell their produce 15% less than the Indicative price (Rs. 180/40Kg). In view of this exploitative tactic the present analysis is based on Rs. 153/40 Kg – amount left after deduction of 15% commission from Rs 180/ 40 Kg.

68. It is visible from the data reported in Table-16 that all of NPC values are greater than one which mean that sugarcane growers are receiving relatively higher price than the corresponding price of sugarcane in the international market. This means why sugarcane growers are protected through the output pricing policy. A pertinent question rises here why sugarcane growers are policy protected? A valid explanation may be that sugar is an important food item. It's stable supply is important to ensure adequate availability of sugar in the country and save foreign exchange by substituting imported sugar with domestic sugar. International price may change abruptly which may add to import burden of Pakistan. At the same time sugarcane provides dry fodder for animals during winter that's why farmer continue its cultivation.

Table – 16: Nominal Protection Coefficients for Sugarcane in Punjab and Sindh under Import Scenario

Year	PUNJAB	SINDH
	NPC	
2013-14	1.3	1.2
2014-15	1.3	1.3
2015-16	1.2	1.1
2016-17	1.0	1.0
2017-18	1.3	1.0

11.2 Effective Protection Coefficients (EPCs)

69. Unlike NPC, EPC is the ratio of the difference between the revenue and the cost of tradable inputs at the private prices and the difference between the revenue and the tradable inputs cost at social prices. Thus EPC is the indicator of net incentive and disincentive effect of all policies affecting prices of tradable (seed, fertilizer, pesticides, cost of tractor run operations, tube well irrigations etc) inputs and output.

70. Just like NPC coefficients, EPC greater than one means that private profit is higher than that would be without government intervention in the input/ output markets. Contrarily EPC less than one indicates that net effect of policies which change prices of inputs and output reduces private profit. In the former case there is domestic protection to the producers of wheat while in the later case the producers are indirectly taxed which depresses domestic production.

Table -17: Effective Protection Coefficients for Sugarcane in Punjab and Sindh under Import Scenario

Year	EPC (Punjab)	EPC (Sindh)
2013-14	1.4	1.2
2014-15	1.4	1.3
2015-16	1.2	1.1
2016-17	0.9	0.9
2017-18	1.3	0.9

71. Perusal of Effective Protection Coefficients (EPCs) values in the above table-17 reinforces the conclusion drawn from the foregoing NPC values. It is visible that though in Punjab level of protection to sugarcane growers has been significantly higher, in Sindh it has been less than Punjab. Rather in last two years there has not been any protection to Sindh growers. It supports that sugarcane production in Sindh is more economical. It's main reason is relatively more yield in Sindh. For detail Annexes VII & VIII.

11.3 Export scenario analysis

11.3.1 Nominal Protection Coefficient

72. NPC values under export scenario are produced in Table-18 below.

Table -18: Nominal Protection Coefficients for Sugarcane in Punjab and Sindh under Export Scenario

Year	NPC (Punjab)	NPC (Sindh)
2013-14	1.3	1.2
2014-15	1.3	1.3
2015-16	1.2	1.1
2016-17	1.3	1.0
2017-18	1.7	1.1

73. It is indicated from Table-18 that NPC values under export scenario for sugar always remained higher than one (between 1 and 1.7) in both provinces throughout the period under analysis. However, their stretch is larger for Punjab than Sindh. The situation again implies policy protection to sugarcane growers in Pakistan.

74. Numeric in Table-19 indicate that under export scenario, EPC values both for Punjab and Sindh have been greater than one which is suggestive of Pakistan's incapability of sugarcane production for export purposes.

11.3.2 Effective Protection Coefficients (EPCs)

Table -19: Effective Protection Coefficients (EPCs) for Sugarcane in Punjab and Sindh under Export Scenario

Year	EPC (Punjab)	EPC (Sindh)
2013-14	1.3	1.2
2014-15	1.4	1.3
2015-16	1.1	1.1
2016-17	1.0	0.9
2017-18	1.1	1.1

11.3.3 Domestic Resource Cost Coefficients (DRCs)

75. Domestic Resource Cost (DRC) indicates the cost of non-tradable domestic resources used per unit of the value added in production of a commodity, estimated at social prices. The numerator in these calculations is the opportunity cost of non-tradable factors used in domestic production while denominator is the value addition calculated at social prices. DRC coefficient less than one indicates comparative advantage in domestic production of the concerned commodity. The reason is that cost of non-tradable domestic factors of production like hired labour, interest on capital, farm yard manure, transportation, canal water, land rent, managerial services, land revenue and drainage cess is less than the corresponding costs of importing these factors.

75. Based on cost of production of average farmer and import price of sugar, DRCs for Punjab and Sindh are estimated and produced in Table-20. In this respect detailed data on private and social profitability for the study period are produced in Annex-IX & X.

Table -20 Domestic Resource Cost Coefficients (DRCs) for Sugarcane in Punjab and Sindh Provinces

Year [1]	Under import situation		Under export situation	
	Punjab [1]	Sindh [2]	Punjab [3]	Sindh [4]
2013-14	0.7	0.5	0.7	0.5
2014-15	0.9	0.6	0.9	0.6
2015-16	0.7	0.6	0.7	0.6
2016-17	0.5	0.4	0.8	0.4
2017-18	0.7	0.5	0.8	0.5

76. It is observed from Table-20 that DRCs under import scenario analysis indicate a mixed trend, however, these have been significantly less than one. The same trend is reflected in export scenario analysis.

77. Domestic resource cost coefficients (DRCs) in sugarcane production calculated at the import parity price are found less than one which suggest that the resource cost of domestic production of sugarcane in Pakistan is less than the corresponding import costs which indicates comparative advantage in domestic production of sugar with respect to non-traded inputs explained.

12. DOMESTIC DEMAND, SUPPLY, STOCK AND PRICES OF SUGAR

12.1 Domestic demand, supply and stocks

78. The sugar production from 2017-18 (Oct-Sept) crop has been estimated at 6.58 million tonnes. Adding 1.58 million tonnes of leftover stocks from 2015-16, the total sugar supply for 2017-18 consumption year is estimated to 8.16 million tonnes. Based on average per capita

availability of sugar estimated at 23.62 kgs during 2017-18, total domestic requirement for a population of 207.77 million has been worked at 4.91 million tonnes for 2017-18. Thus, there is an estimated 3.25 million tones surplus sugar is available at country for export during 2017-18. For detail Annex-XI.

Table-21 **Domestic Requirement Situation of Sugar during 2017-18**

S. No	Items	Data(million)
1	Opening stocks left over from 2016-17	1.58
2	Production 2017-18	6.58
3	Total Supply for 2017-18	8.16
4	Population	207.77
5	Requirement	4.91
6	Surplus/ deficit	0.835

12.2 Behavior of sugar prices in domestic market

79. The monthly average wholesale prices of sugar in Karachi, Hyderabad, Lahore, Faisalabad and Peshawar markets during 2017 and 2018 (Jan - June) are presented Annex-XII, while for the last 15 years in Annex-XIII.

80. During 2017, average monthly wholesale prices ranged between Rs 4860 per 100 kgs in Hyderabad during the months of November and March 2014 to Rs 6400 per 100 kgs in Peshawar during January 2017. During 2018 (Jan-June), average monthly wholesale prices highest and lowest price observed between Rs 3700 to 6250 per 100 kgs in Peshawar market during January and June 2018. The overall average of sugar price at country level ranged between Rs 5227 to Rs 6146 per 100 kgs during 2017-18.

13. WORLD SUPPLY, DEMAND, STOCKS, TRADE AND PRICES OF SUGAR

13.1 Supply, demand, stocks and trade

81. The data on world balance sheet of sugar (raw equivalent) for the period of 2015-16 to 2017-18 are presented in Table-22:

Table -22 World Balance Sheet of Sugar (Raw Equivalent): 2015-16 to 2017-18 (October - September)

Item	2015-16	2016-17 Estimated	2017-18 Projected
	-----Million tones-----		
1. Opening stocks	96.49	91.41	87.36
2. Production	164.25	168.37	179.30
3 Total supply (item 1+2)	260.74	259.78	266.66
4. Disappearance (consumption)	169.09	171.48	174.41
5. Stock adjustment *	(-)0.24	0.09	3.67
6. End year stocks (3-4+5)	91.41	87.36	87.47
7. Trade (Export)	66.09	60.23	57.47

Note: * Including adjustment for unknown net trade.

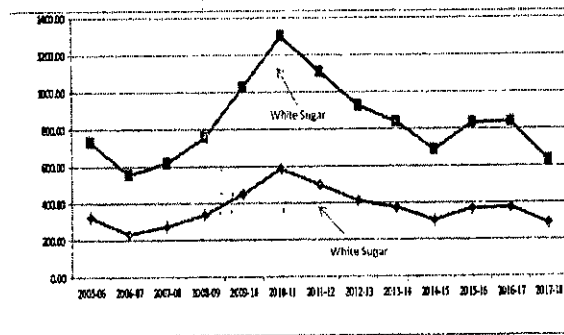
Source: Quarterly Market Report November 2017, International Sugar Organization.

82. The world sugar production is estimated at 168.37 million tones during 2016-17, 4.05 million tones (2.51 percent) higher than the last year level of 164.25 million tones. Accounting for the opening stocks of 91.41 million tones, global supply of sugar in 2016-17 were reported at 259.78 million tones (0.96 percent) lower than 2015-16. The world consumption in 2016-17 is estimated at 171.48 million tones, 2.39 per cent higher than the last year level of 169.09 million tones. End year stocks in 2016-17 are estimated at 87.36 million tones, 4.05 percent lower than last year.

83. World sugar production during 2017-18 is forecast at 179.30 million tones, 6.49 percent higher than last year's production. Accounting for the opening stocks of 87.36 million tones, global supply of sugar in 2017-18 has projected at 266.66 million tones 2.65 percent higher than 2016-17. The world consumption in 2017-18 is projected at 174.41 million tones, 1.71 per cent higher than last year. End year stocks projected to increase slightly during 2017-18 are 87.47 million tones. If these forecasts become true, the price of sugar in international market may firm.

13.2 International Prices of Sugar

84. The international prices of raw (fob Caribbean ports) and white (fob London) sugar from 2005-06 to 2017-18 are presented in Annex-XIV while their graphical movement shown in Fig-3.



85. The prices of both raw and white sugar have fluctuated widely during the period under review. During 2005-06, the prices of raw sugar averaging at US \$ 327.15 but again declined to \$ 229.90 in next year. From 2007-08 prices started upward trend and averaged at \$ 585.45 per tonne in 2010-11, and touched the highest level of price during the period under review. From 2011-12 prices started decreasing and reached at \$ 307.69 per tonne during 2014-15. Next couple of year prices started increasing and reached at \$ 376.40 during 2016-17. In the current season 2017-18 decreased sharply and reached at \$ 285.62 per tonne.

86. The prices of white sugar during the under reference period have almost followed similar pattern to those of raw sugar.

14. IMPORT AND EXPORT PARITY PRICES OF SUGARCANE

87. Estimation of import parity price of a commodity is helpful in determining the opportunity cost of resources used in its domestic production while the export parity prices are helpful in ascertaining its competitiveness in international market. Since Pakistan has been importer of sugar in some years and exporters in the others, both the import and export parity prices of sugarcane have been worked out for analyzing price policy options for the next crop season.

88. Both the import and export parity prices have been calculated on the basis of white sugar price (fob London). Detailed calculations in this connection are given in Annexes-XV and XVI, while the results are summarized in Table-23.

Table-23: Import/Export Parity Prices of Sugarcane as Worked Back from Average fob (London) Prices of Sugar

Average fob London prices of white sugar per tonne	Sugarcane prices (Rs/40 kgs)	
	Punjab	Sindh
Import parity		
US \$ 371.92 (September 2018)	129.55	134.72
US \$ 464.16 (2017-18(Oct-Sept))	154.31	160.47
US \$ 433.81 (2014-15 to 2016-17)	147.01	152.88
Export parity		
US \$ 371.92 (September 2018)	94.19	97.95
US \$ 464.16 (2017-18(Oct-Sept))	118.98	123.73
US \$ 433.81 (2014-15 to 2016-17)	110.82	115.24

Source Annexes –XV and XVI

15. MILL-GATE PRICES OF SUGARCANE BASED ON DOMESTIC WHOLE SALE PRICES OF SUGAR DURING 2017-18 CONSUMPTION YEAR

89. Sugarcane prices have also been estimated from the wholesale prices of sugar during the 2017-18 consumption year and presented in Table-24. This analysis is based on actual sucrose recovery as reported by the PSMA; processing cost of sugar and Federal Excise Duty @ 8 percent. A summary of sugarcane prices estimated under this scenario from various wholesale prices of sugar is presented in Table-24 while the details are given in Annex - XVII.

Table- 24: Sugarcane Prices Estimated from Expected Wholesale Prices of Sugar During 2017-18

Wholesale prices of sugar (Rs /Tonnes)	Sugarcane prices (Rs/40 Kgs)	
	Punjab	Sindh
Rs 5500	125.54	130.55
Rs 6000	136.95	142.42
Rs 65000	148.37	154.29

Source: Annex-XVII

16. MARKETING OF SUGARCANE 2017-18 CROP

90. In recent years, the expansion in sugar industry has increased the demand of cane. Area under sugarcane, a high water delta crop, has increased to around 1.34 million hectare highest in the history. Its continuous expansion which affect the production of other crops particularly cotton, may not be feasible. This constraint can be addressed through improving research/extension and launching development programmes, supplying of subsidized inputs and adoption of recommended technology etc.

16.1 Price/Supply of Sugarcane

91. In the wake of all time higher production of sugarcane, the supply of sugarcane to the sugar mills in the Punjab and Sindh was observed satisfactory during 2017-18. But the sugarcane growers were observed not receiving price as announced by the provincial governments, mainly for elements of middle and unlawful deduction of sugarcane by the sugar mills. In Punjab, growers were reported putting on fire standing crop due to low price which ranged between Rs 90 to Rs 120 during the harvest season. However towards the end of season the prices was reported around Rs 160 per 40 kgs.

92. In a meeting the Chief Minister, Sindh, it was agreed that the sugarmills will purchase sugarcane at mill gate from growers @ Rs 170/40kgs and the crushing season will start by mid of November, 2017. In another intervention by the government, the State Bank of Pakistan and Sindh High Court decided that the price of sugarcane at mill gate will be Rs 160/ 40 kgs. However, despite all these above mentioned interventions by the government, the farmers reported that the price they received in the range of Rs 110 to 130/ 40 kgs.

93. In K.P, Rs 180 per 40 kgs at mill gate price of sugarcane was fixed by the sugarcane price committee. However Rs 150 were paid to farmers. The sugarcane price committee in K.P is working without technical member like an Economist who could properly analyze the economics of sugarcane and suggest intervention price for sugarcane.

94. The sugar mills can enter into contract with the growers specifying the time of delivery and prices of cane. This will ensure staggered supply of cane to the mills. The millers are of the view that contract system cannot be successful unless both the growers and millers are bound by law to honor the contract. Contract between mills and groups/ cooperatives of growers should be convenient for all concerned. The provincial sugarcane commissioners should initiate proposals for legislation in consultation with growers and sugarmills

95. Sugarcane is water consuming crop and during the shortage of canal water, farmers use underground water through tube-well which is costly due to high prices of diesel and also reduces the per acre yield. The government should provide on subsidize loan facility for solar system for tube well and installations of new tube-well.

17. ACKNOWLEDGEMENT

The technical contribution and professional efforts of the following staff members are highly appreciated in completion of Sugarcane Policy Report for 2018-19 Crop.

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**PROVINCE-WISE AREA , PRODUCTION AND YIELD OF SUGARCANE
IN PAKISTAN : 2007-08 TO 2017-18**

YEAR	PUNJAB	SINDH	KPK	BALUCHISTAN	PAKISTAN
AREA ----- 000 hectares -----					
2007-08	827.2	308.8	104.8	0.50	1241.3
2008-09	666.5	263.9	98.2	0.77	1029.4
2009-10	607.4	233.9	100.8	0.70	942.8
2010-11	672.2	226.5	88.4	0.60	987.7
2011-12	761.2	189.7	105.9	0.70	1057.5
2012-13	767.7	253.7	106.7	0.65	1128.8
2013-14	756.8	297.6	117.4	0.67	1172.5
2014-15	710.6	316.7	112.5	0.66	1140.5
2015-16	705.4	312.8	112.7	0.70	1131.6
2016-17	777.8	320.5	118.6	0.70	1217.6
2017-18	859.1	333.3	148.5	0.86	1341.8
YIELD ----- Tonnes per hectare -----					
2007-08	48.73	60.86	45.73	56.20	51.49
2008-09	48.45	50.41	44.89	49.22	48.62
2009-10	51.57	57.74	44.72	50.86	52.37
2010-11	55.76	60.78	45.59	51.33	56.00
2011-12	56.35	56.87	44.23	44.86	55.22
2012-13	55.99	62.93	44.71	48.46	56.48
2013-14	57.75	61.70	45.67	48.06	57.54
2014-15	57.80	52.46	45.40	47.42	55.09
2015-16	59.50	57.49	48.79	45.29	57.87
2016-17	63.79	63.05	47.46	45.14	61.99
2017-18	64.10	61.84	51.25	50.47	62.11
PRODUCTION ----- 000 Tonnes -----					
2007-08	40306.0	18793.9	4792.0	28.1	63920.0
2008-09	32294.7	13304.3	4408.5	37.9	50045.4
2009-10	31324.0	13505.4	4507.9	35.6	49372.9
2010-11	37481.0	13766.4	4030.3	30.8	55308.5
2011-12	42893.0	10788.3	4684.3	31.4	58397.0
2012-13	42982.0	15966.2	4770.2	31.5	63749.9
2013-14	43704.0	18362.5	5361.4	32.2	67460.1
2014-15	41074.0	16613.8	5107.0	31.3	62826.1
2015-16	41968.2	17984.3	5498.3	31.7	65482.5
2016-17	49613.0	20208.9	5628.7	31.6	75482.2
2017-18	55067.5	20611.9	7610.0	43.4	83332.8

Sources:
 1- For 2007-08 to 2015-16 : Agricultural Statistics of Pakistan 2016-17, NFS&R, Islamabad.
 2- For 2016-17: Final estimates provided by the concerned Provincial Agriculture Departments.
 3- For 2017-18: Final estimates provided by Economic Wing, M/O NFS&R, Islamabad.

**PROVINCE-WISE AREA , PRODUCTION AND YIELD OF SUGARCANE
IN PAKISTAN : 2007-08 TO 2017-18**

YEAR	PUNJAB	SINDH	KPK	BALUCHISTAN	PAKISTAN
AREA ----- 000 acres -----					
2007-08	2044.1	763.1	259.0	1.2	3067.4
2008-09	1647.0	652.1	242.7	1.9	2543.7
2009-10	1500.9	578.0	249.1	1.7	2329.8
2010-11	1661.1	559.7	218.4	1.5	2440.7
2011-12	1881.0	468.8	261.7	1.7	2613.2
2012-13	1897.1	626.9	263.7	1.6	2789.3
2013-14	1870.1	735.4	290.1	1.7	2897.3
2014-15	1756.0	782.6	278.0	1.6	2818.2
2015-16	1743.1	773.0	278.5	1.7	2796.3
2016-17	1922.0	792.0	293.1	1.7	3008.8
2017-18	2122.9	823.6	367.0	2.1	3315.6
YIELD ----- Tonnes per acre -----					
2007-08	19.72	24.63	18.50	22.74	20.84
2008-09	19.61	20.40	18.17	19.92	19.67
2009-10	20.87	23.37	18.10	20.58	21.19
2010-11	22.56	24.60	18.45	20.77	22.66
2011-12	22.80	23.01	17.90	18.15	22.35
2012-13	22.66	25.47	18.09	19.61	22.86
2013-14	23.37	24.97	18.48	19.45	23.28
2014-15	23.39	21.23	18.37	19.19	22.29
2015-16	24.08	23.27	19.74	18.33	23.42
2016-17	25.81	25.52	19.21	18.27	25.09
2017-18	25.94	25.03	20.74	20.42	25.13
PRODUCTION ----- 000 Tonnes -----					
2007-08	40306.0	18793.9	4792.0	28.1	63920.0
2008-09	32294.7	13304.3	4408.5	37.9	50045.4
2009-10	31324.0	13505.4	4507.9	35.6	49372.9
2010-11	37481.0	13766.4	4030.3	30.8	55308.5
2011-12	42893.0	10788.3	4684.3	31.4	58397.0
2012-13	42982.0	15966.2	4770.2	31.5	63749.9
2013-14	43704.0	18362.5	5361.4	32.2	67460.1
2014-15	41074.0	16613.8	5107.0	31.3	62826.1
2015-16	41968.2	17984.3	5498.3	31.7	65482.5
2016-17	49613.0	20208.9	5628.7	31.6	75482.2
2017-18	55067.5	20611.9	7610.0	43.4	83332.8

Sources: 1- For 2007-08 to 2015-16 : Agricultural Statistics of Pakistan 2016-17, NFS&R, Islamabad.
2- For 2016-17: Final estimates provided by the concerned Provincial Agriculture Departments.
3- For 2017-18: Final estimates provided by Economic Wing, M/O NFS&R, Islamabad.

**DISTRICT- WISE AREA, YIELD AND PRODUCTION OF SUGARCANE
AVERAGE OF 2015-16 TO 2017-18**

ANNEX-III

Area: 000 ha
Production: 000 tonnes
Yield: Tonnes/hectare

S.No	Province/ District/ Agency	Area	Production	Share in total production	Yield	S.No	Province/ District/ Agency	Area	Production	Share in total production	Yield
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PUNJAB

1	R.Y.Khan	162.55	12627.29	18.89	77.89
2	Faisalabad	105.89	6981.04	8.00	56.48
3	Muzaffargarh	52.20	3463.93	4.63	66.35
4	Sargodha	60.83	3265.00	4.37	53.67
5	Jhang	50.99	2976.10	3.98	58.38
6	Rawalpindi	30.76	2563.30	3.43	83.34
7	Chiniot	42.35	2333.26	3.12	55.08
8	T.T.Singh	38.58	2327.39	3.11	60.33
9	Bahawalpur	25.49	1705.55	2.28	66.80
10	Bhakkar	25.63	1597.87	2.14	62.34
11	Kesur	30.22	1553.36	2.08	51.41
12	M.B.Din	23.34	1156.20	1.55	49.54
13	Vehari	17.94	1057.64	1.41	58.94
14	Layyah	14.97	903.47	1.21	60.34
15	Bahawalnagar	13.83	788.44	1.05	57.86
16	Nankana Sahib	13.76	762.71	1.01	54.70
17	Okara	12.81	638.27	0.85	49.81
18	D.G.Khan	8.90	564.34	0.78	65.63
19	Khanewal	6.75	432.37	0.58	64.08
20	Khushab	8.09	416.47	0.56	51.48
21	Hafizabad	6.20	288.30	0.39	46.47
22	Multan	5.39	285.20	0.38	52.88
23	Sahiwal	5.28	273.35	0.37	51.94
24	Lodhran	3.91	260.74	0.35	66.68
25	Mianwali	2.83	143.28	0.19	50.57
26	Shalhpura	2.29	123.90	0.17	54.03
27	Gujrat	2.16	99.99	0.13	45.36
28	Pakpattan	1.89	99.61	0.13	52.74
29	Gujranwala	1.75	87.88	0.09	38.59
30	Narowal	1.48	47.58	0.06	32.07
31	Sialkot	1.21	39.49	0.05	32.64
32	Lahore	0.40	20.22	0.03	50.54
33	Jhelum	0.27	9.68	0.01	36.30

KHYBER PAKHTUNKHWA

1	D.I.Khan	39.64	2411.24	3.23	60.84
2	Charsadda	32.01	1404.21	1.88	43.86
3	Mardan	30.64	1333.18	1.78	43.52
4	Peshawar	9.87	512.74	0.69	51.86
5	Nowshera	4.88	239.17	0.32	51.12
6	Malakand	4.82	184.60	0.25	38.27
7	Swabi	2.24	86.42	0.12	38.60
8	Bannu	0.52	20.59	0.03	39.72
9	Khyber AG.	0.89	15.89	0.02	23.08
10	Tank	0.63	12.51	0.02	19.96
11	Mohmand AG.	0.20	8.53	0.01	32.63
12	Lakki Marwat	0.14	5.44	0.01	39.14
13	Kohat	0.13	4.50	0.01	34.82
14	Haripur	0.10	3.21	0.00	31.49
15	Bunir	0.07	1.78	0.00	28.56
16	Dir Lower	0.04	1.37	0.00	31.10
17	F.R.D.I.Khan	0.09	0.93	0.00	10.58
18	F.R.Peshawar	0.02	0.55	0.00	31.21
19	Hangu	0.01	0.32	0.00	38.08
20	F.R.Bannu	0.05	0.20	0.00	3.86
21	Mansehra	0.01	0.18	0.00	24.18

Sub Total	780.76	48882.88	65.38	62.61	Sub Total	126.69	6245.65	8.36	49.34
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SINDH

1	Ghotki	53.02	3627.89	4.85	68.43
2	Nawabshah	33.14	2166.82	2.90	65.39
3	Badin	41.26	2059.98	2.76	49.93
4	Thatta	34.95	2043.48	2.73	58.48
5	Tando Muhammad	21.42	1364.94	1.83	53.73
6	Khalipur	22.25	1361.21	1.82	61.19
7	N.Feroze	21.84	1325.14	1.77	60.67
8	Tando Allahyar	20.37	1154.27	1.54	56.66
9	Mirpurkhas	18.75	1117.74	1.49	59.81
10	Sanghar	16.35	1020.89	1.37	62.42
11	Matiani	14.93	999.37	1.30	64.95
12	Sukkur	7.38	468.56	0.53	63.92
13	Hyderabad	6.37	368.12	0.49	67.83
14	Dadu	5.27	281.09	0.38	53.38
15	Unerkot	2.56	135.16	0.18	52.78
16	Larkana	0.71	56.27	0.08	79.55
17	Jamshoro	0.56	26.41	0.04	46.85
18	Tharparkar	0.44	26.39	0.04	59.52
19	Shikarpur	0.41	19.38	0.03	47.86
20	Jacobabad	0.17	5.20	0.01	30.59
21	Shadadkot	0.06	3.45	0.00	54.36

BALUCHISTAN

1	Sibi	0.61	32.99	0.04	54.00
2	Lasbela	0.05	2.60	0.00	57.67

Sub Total	322.19	19601.68	26.22	60.84	Sub Total	0.66	35.59	0.06	54.26
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Pak Total	1230.19	74765.79	100.00	60.78
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- Notes:**
1. Data have been arranged in descending order of production.
 2. Percentage shares are calculated on the basis of country total.
- Sources:**
- 1- Respective M/o NFS&R, Islamabad
 - 2- Respected Agriculture Provincial Departments

AVERAGE FARMER COST OF PRODUCTION OF SUGARCANE IN PUNJAB FOR 2017-18 AND 2018-19 CROPS

S.No	Operations / Inputs	Unit	Average No. of units/used acre	For 2017-18 crop		Average No. of units/used acre	For 2018-19 crop	
				Cost per unit	Cost per acre		Cost per unit	Cost per acre
1	2	3	4	5	6=4*5	7	8	9=7*8
			Field dataRupees..		Field dataRupees..	
			2003-04			2018		
1	Land preparation:							
1.1	Deep ploughing	No. of ploughings	0.476	1400	666.4	0.58	1400	812
1.2	Rotavator/disc plough used	No. of ploughings	0.152	1500	228	1.00	1500	1500
1.3	Ploughing	"	7.847	650	5100.6	4.00	800.00	3200
1.4	Planking	No. of plankings	3.309	325	1075.4	1.00	400.00	400
1.5	Tractor levelling	Hour				0.54	800.00	432
1.6	Laser levelling	Hour	0.561	1200	336.6	1.00	1200.00	1200
2	Seed bed preparation							
2.1	Ploughing	No	0.467	650	151.78	1.00	800.00	800
2.2	Planking	No	0.193	325	31.36			
2.3	Ridge making							
2.3.1	Manual	Hour	0.106	400	21.2			
2.3.2	With tractor	Hour/ care	0.7	650	227.5	0.50	800.00	400
2.3.3	Clearing soil at ends of ridges (labor charges)	M. days/ acre				1.00	400.0	400.0
2.4	Bund making							
2.4.1	Manual	M. days/ acre	1.655	400	331			
2.4.2	With tractor	Rs./ acre	0.158	650	51.4			
3	Seed and sowing operations:							
3.1	Cane stes used as seed	Man/ha/ acre	10.64	1000	5320	10.00	1000.00	10000
3.2	Contract sowing - including harvesting, stripping, making of sets for seed, transport and sowing	Rs./ acre			3500			3500
4	Irrigation							
4.1	Canal	No. of irrigations/acre	8.9		252	9.00		250
4.2	Private tubewell (RS./irrigation)	No. of irrigations/acre	4.44	694	3081.36	7.00	750.00	5250
4.3	Mixed	No. of irrigations/acre	2.16	150	324	2.16	375.00	810
4.4	Labour for irrigation and water course cleaning	M. days/ acre	4.86	400	1944	2.00	400.00	800
5	Interculture/ hoeing							
5.1	Manual binding of plants	Rs./acre	0.609	1300	791.7			
5.2	Manual hoeing on contract	No. of hoeings				1.40	1000.00	1400
5.3	With tractor	Hour/acre	2.008	650	1305.2	0.50	800.00	400
6	Plant protection including application cost							
6.1	weedicid	No. of applications	0.124	650	80.6	1.00	950.00	950
6.2	Granules	"	0.12	600	72			
6.3	Sprays	"	0.305	650	198.25	1.00	700.00	700
6.4	Application cost	Rs./application/acre				3.00	200.00	600
7	Farm Yard Manure including transport and application cost	No. of trolleys	2		3625	0.80	2800.00	1213
8	Fertilizers: (bags)							
8.1	DAP	No. of bags	1.28	2500	3200	2.00	3614.00	7228
8.2	Urea	"	1.73	1400	2422	3.60	1830.00	6588
8.3	NP	"	0.35	2500	875	0.52	2950.00	1534
8.4	SSP	"	0.01	1125	11.25			
8.5	CAN	"	0.01	1625	16.25	0.33	1625.00	536.25
8.6	SOP	"	0.07	3780	264.6	0.70	3800.00	2660
8.7	Gypsum	"	0.44	200	88			
8.8	Fertilizer transport and application cost	"	3.89	100	389	7.2	100.00	715
9	Traded inputs' cost (Item 1 to 8 minus Item 4.1)	Rs./acre			35729			54279
10	Mark up on item 9 @ 14% per annum for 13 months	"			4644.82			8194
11	Land rent for 13 months	"		24000	26000		25000	27083
12	Average weighted land tax @ Rs 132/acre/annum for 13 months	"			143			132.00
13	Management charges for 13 months	"			2909			2909.00
14	Crop harvesting, stripping, binding, loading etc	Rs./ 40 Kg		13.86	8316		20.00	13190
15	Expected escalation in cost of selected items				2975			
16	Total cost	Rs./ acre			80717			105787
17	Yield per acre	40 Kg/ acre			600			659.50
18	18.1 Cost of production at farm level with land rent	Rs./ 40 Kg			134.53			160.41
18.2	Cost of production at farm level without land rent	Rs./40 Kg			91.20			119.34
19	Marketing cost				16			16.50
20	Road Cess	Rs./40 Kg			1			1.00
21	21.1 Cost of production at mill gate with land rent	Rs./ 40 Kg			151.53			177.91
21.2	Cost of production at mill gate without land rent	Rs./ 40 Kg			108.20			136.84

Source:

- 1 For 2018-19 rates/ prices of inputs, API field survey , 2018
- 2 For average yield in Punjab, Crop Reporting Service, Punjab
- 3 For average yield in Sindh, Crop Reporting Service, Sindh

AVERAGE FARMER COST OF PRODUCTION OF SUGARCANE IN SINDH: 2017-18 & 2018-19 crops

S.No	Operations / Inputs	Unit	Average No. of units/used acre	For 2017-18 crop		Average No. of units/used acre	For 2018-19 crop	
				Cost per unit	Cost per acre		Cost per unit	Cost per acre
1	2		3	4	5=3*4	6	7	8=6*7
			Field data 2003-04			Field data 2018		
1	Land preparation:							
1.1	Deep ploughing	No	0.523	1500	784.5	0.680	1550	1054
1.2	Ploughing	No	5.606	1000.00	5606.0	4.000	1200	4800
1.3	Planking	No	1.577	500.00	788.5	1.000	600	600
1.4	Tractor levelling	Hour	0.972	1000.00	972.0	0.30	1000	300
1.5	Laser levelling	"				1.000	1200	1200
2	Seed bed preparation							
2.1	Ploughing	No	1.136	1000.00	783.8	1.0	1200	1200
2.2	Planking	No	1.340	500.00	335.0			
2.3	Ridge making							
2.3.1	Manual	M. Day	0.074	400.00	20.4			
2.3.2	with tractor	Hrs.	0.174	1000.00	120.1	0.500	1200	600
2.4	Bund making							
2.4.1	Manual		0.403	400.00	111.2			
2.4.2	with Tractor		0.812	1000.00	812.0			
2.5	Clearing soil at ends of ridges	M. day				1.000	400	400
3	Seed and sowing operations:							
3.1	Seed used	40 Kgs	64.118	201.00	8892.5	89.0	182	16198
3.2	Ghunta		0.685	5000.00	2363.3			
3.3	Harvesting, stripping and making of sets	M. Days						
3.4	Transport (contract)							
3.5	Sowing of sets	M. Day						
3.6	Contract sowing including harvesting, stripping, making of sets, transport and sowing	Rs./ acre	1.000		3500.0			3500
4	Irrigation							
4.1	Canal	Irrigations/acre	20.880		181.9	18		250
4.2	Private tubewell (RS./irrigation)	Irrigations/acre	2.450	350.00	857.5	1.0	725	725
4.3	Mixed	"				2.16	725	1566
4.4	Labour for irrigation and water course cleaning	M. day	5.859	400.00	2343.6	2.0	400	800
5	Interculture/ hoeing							
5.1	Manual		1.762	1500.00	2643.0	2.0	1900	3800
5.2	Hoeing with tractor	No	1.725	1100.00	1897.5	1.8	1200	2160
6	Plant protection including application cost							
6.1	weedicide	No. of sprays	0.300	625.00	187.5	1.0	780	780
6.2	Granules	"	0.245	560.00	137.2			
6.3	Sprays	"	0.265	700.00	185.5	1.20	780	936
6.4	Application cost	Rs./appli-/acre				2.20	150	330
7	Farm Yard Manure including transport & application cost (50%)	No. of trolleys	1.000		3000.0	0.32	1600	512
8	Fertilizers: (bags)							
8.1	DAP	No. of bags	1.512	2500.00	3780.0	1.6	3614	5782.4
8.2	Urea	"	3.625	1400.00	5075.0	4.0	1830	7320
8.3	NP	"	0.376	2100.00	789.6	0.6	2950	1652
8.4	CAN	"	0.239	1600.00	382.4			
8.5	SOP	"	0.085	3750.00	318.8	0.2	3800	760
8.6	Fertilizer transport and application cost	"	5.837	85.00	496.1	6.4	100	636
9	Gross cost (Item 1 to 8-Item 4.1)	Rs./acre			47183			57861
10	Mark up on item 9 @ 14.5% per annum for 13 month	"			7412			8776
11	Land rent	"		25000	27083		26000	28167
12	Average weighted land tax @ Rs 200/acre/annum for 13 month	"			266.67			132
13	Management charges for 13 months	"			2909.00			2909
14	Crop harvesting, stripping, binding, loading etc	Rs./ 40 Kg		16.00	12000.00		17	11900
15	Expected escalation in cost of selected items				2668.00			
16	Total cost	Rs./ acre			99522			109495
17	Yield per acre	40 Kg/ acre			750.00			700
18	Cost of production at farm level							
18.1	Including land rent	Rs./ 40 Kg			132.70			156.42
18.2	Excluding land rent	Rs./ 40 Kg			96.58			116.18
19	Marketing cost							
19.1	Transport	Rs./40 Kg			15.00			16.50
19.2	Road Cess	Rs./40 Kg			0.32			1.00
20	Cost of production at mill gate							
20.1	Including land rent	Rs./ 40 Kg			148.02			173.92
20.2	Excluding land rent	Rs./ 40Kg			111.90			133.68
21	Provision for risk factor	Rs./ 40Kg			15.67			
22	Cost of production at mill gate							
22.1	Including land rent	Rs./ 40 Kg			163.69			
22.2	Excluding land rent	Rs./ 40Kg			127.57			

1 For rates/ prices of inputs, API filed survey, 2018

2 For average provincial yield in 40 Kg units (700/acre), Crop Reporting Service, Punjab, Lahore

3 Expected escalation in cost of some selected items and provision for risk factor which was included in cost of production for 2017-18 is excluded from the cost of production for 2018-19.

**ECONOMICS OF SUGARCANE AND COMPETING CROPS AT
PRICES REALIZED BY THE GROWERS: 2017-18 CROPS**

S #	Province/crops/crop combination	Crop duration		Water used	Gross cost	Cost of purchased inputs	Gross revenue	Gross margin	Net Income	Output-input ratio	Revenue per		
		Days	Acre inches								Rupee of purchased inputs	Crop day	Acre inch of water used
		1	2	3	4	5	6	7=6-5	8=6-4	9=6/4	10=6/5	11=6/2	12=6/3
Punjab													
1	Sugarcane	394	48	79323	18288	93725	75437	14402	1.18	5.12	238	1953	
2	Seed Cotton	240	22	51820	16923	59767	42844	7947	1.15	3.53	249	2717	
3	Basmati Paddy	180	58	44106	19846	48041	28195	3935	1.09	2.42	267	828	
4	IRRI Paddy	180	62	39583	16476	35833	19357	-3751	0.91	2.17	199	578	
5	Wheat	180	12	40225	10905	44063	33158	3837	1.10	4.04	245	3672	
6	Sunflower (spring)	180	22	45156	17710	47240	29531	2084	1.05	2.67	262	2147	
7	Seed Cotton + Wheat	420	34	92045	27828	103830	76002	11784	1.13	3.73	247	3054	
8	Seed Cotton+Sunflower	420	44	96976	34632	107007	72375	10031	1.10	3.09	255	2432	
9	Basmati Paddy+Wheat	360	70	84331	30751	92103	61352	7772	1.09	3.00	256	1316	
10	Basmati Paddy+Sunflower	360	80	89262	37555	95281	57725	6019	1.07	2.54	265	1191	
11	IRRI Paddy + Wheat	360	74	79808	27380	79895	52515	87	1.00	2.92	222	1080	
12	IRRI Paddy+Sunflower	360	84	84739	34185	83073	48887	-1667	0.98	2.43	231	989	
Sindh													
1	Sugarcane	488	71	102527	25990	119891	93901	17365	1.17	4.61	246	1689	
2	Seed Cotton	240	18	54711	16451	73875	57424	19164	1.35	4.49	308	4104	
3	IRRI Paddy	180	56	36429	12089	47235	35147	10807	1.30	3.91	262	843	
4	Wheat	180	12	37298	10998	41363	30364	4064	1.11	3.76	230	3447	
5	Sunflower (spring)	180	22	43759	17050	29475	12425	-14284	0.67	1.73	164	1340	
6	Seed Cotton + Wheat	420	30	92009	27449	115238	87788	23229	1.25	4.20	274	3841	
7	Seed Cotton+Sunflower	420	40	98470	27449	103350	75901	4880	1.05	3.77	246	2584	
8	IRRI Paddy+ Wheat	360	68	73727	23087	88598	65511	14871	1.20	3.84	246	1303	
9	IRRI Paddy+Sunflower	360	78	80188	29139	76710	47571	-3478	0.96	2.63	213	983	

Notes for Annex - VI

1. The economic analysis presented in the above exercise is based on the input-output prices applicable for 2017-18 crops.
2. The data regarding input-output parameters have been adopted from the API's price policy papers for sugarcane, seed cotton, rice paddy and wheat, 2017-18 crops. However, the relevant data for sunflower and canola were adopted from the last support price policy for non-traditional oilseeds 2000-01 crops, with necessary adjustments in input prices for updating costs and incomes for the 2017-18 crops. To incorporate the escalations in input prices, which occurred during the growing period of 2017-18 crops, some marginal revisions/updates have been incorporated.
3. Water use has been estimated from the number of irrigations as reported in the cost of production estimates of the respective crops assuming each irrigation of 3 inches and 'rauni' of 4 inches.
4. The following prices as realized by the growers for different crops are adopted for the analysis:
 - 4.1 The support price of Rs 1300 per 40 kgs, as maintained by the government for 2017-18 crop, has been adopted for the current analysis.
 - 4.2 The wholesale market prices of basmati paddy and IRRI paddy during the post-harvest period in major producer area markets have averaged at Rs 1604 and Rs 875 per 40 kgs, respectively. While, the average price of IRRI paddy in Sindh is reported at Rs 898 per 40 kgs.
 - 4.3 The wholesale market prices of seed cotton during the post-harvest months of 2017-18 in the main producer area markets have averaged at Rs 3133 per 40 kgs in the Punjab and Rs 2955 Sindh.
 - 4.4 The price of Sunflower crops has been reported hovering around Rs 2400/40 kgs and Rs 2500/40 kgs for Canola during 2017-18.
 - 4.5 The indicative prices of sugarcane as announced by the provincial governments are taken for the analysis i.e Rs 180 per 40 kgs in the Punjab and Rs 182 per 40 kgs in Sindh. However, the prices received by the growers remained much lower (ranging Rs 160 and 140, respectively for Punjab and Sindh).
5. The market prices have been adjusted for the marketing expenses to make them effective at the farm level. These expenses amount to Rs 17 per 40 kgs in Punjab and Rs 14.32 in Sindh for sugarcane, Rs 40 for seed cotton in Punjab and Sindh, Rs 45 for rice paddy in Punjab and Sindh, and for wheat and oilseeds, Rs 38 in Punjab and Rs 42 in Sindh.

6. Gross income = (Yield per acre multiplied by price of principal produce at farm gate) plus (value of by-products per acre).
7. Cost of purchased inputs = Cost incurred on seed and related items, fertilizer, supplementary irrigation including labour, canal water rate, pesticides and weedicides.
8. Gross margin = Gross income minus cost of purchased inputs.
9. Net income = Gross income minus gross cost.
10. Output-input ratio = Gross income divided by gross cost
11. Revenue per rupee of purchased inputs cost = Gross income divided by cost of purchased inputs
12. Revenue per crop day = Gross income divided by crop duration in days.
13. Revenue per acre-inch of water used = Gross income divided by irrigation water used in acre inches.

**GROSS REVENUE PER ACRE OF SUGARCANE, TRADED INPUTS AND DOMESTIC FACTORS COST IN
PUNJAB ESTIMATED ON THE BASIS OF PRIVATE (OPEN-MARKET) AND SOCIAL PRICES
(BASIS - IMPORT PARITY PRICE OF SUGAR)**

Description	Revenue	Traded Inputs Cost	Domestic Factor Cost	Profit
----- Rupees per acre -----				
2013-14				
Private Prices	96076	33384	46398	16293
Social Prices	75351	29621	31889	13841
Transfers	20724	3763	14509	2452
2014-15				
Private Prices	89505	32818	51135	5552
Social Prices	68281	28991	35723	3567
Transfers	21224	3827	15412	1985
2015-16				
Private Prices	92106	32184	52760	7161
Social Prices	80018	28304	37188	14526
Transfers	12088	3881	15573	-7365
2016-17				
Private Prices	91800	27990	58295	5516
Social Prices	94752	24916	37970	31867
Transfers	-2952	3074	20325	-26351
2017-18				
Private Prices	108000	28063	57913	22023
Social Prices	83586	27841	37739	18007
Transfers	24414	223	20175	4017

Notes:

1. Social price is price of sugarcane in Pakistan worked back on the basis of export parity price of sugar.
2. Revenue, traded input cost and domestic factor cost derived from the original cost of production tables.

**GROSS REVENUE PER ACRE OF SUGARCANE, TRADED INPUTS AND DOMESTIC FACTORS COST IN
SINDH ESTIMATED ON THE BASIS OF PRIVATE (OPEN MARKET) AND SOCIAL PRICES
(BASIS - IMPORT PARITY PRICE OF SUGAR)**

Description	Revenues	Traded Cost	Domestic Factors' Cost	Profits
----- Rupees per acre -----				
2013-14				
Private Prices	123032	41001	33289	48743
Social Prices	102577	35253	32608	34716
Transfers	20456	5748	681	14026
2014-15				
Private Prices	113568	40811	38485	34272
Social Prices	91450	34525	35632	21292
Transfers	22119	6286	2853	12980
2015-16				
Private Prices	113568	40559	40367	32642
Social Prices	102022	34496	37508	30018
Transfers	11546	6063	2859	2625
2016-17				
Private Prices	114244	36488	41051	36704
Social Prices	118455	30795	38531	49129
Transfers	-4211	5694	2520	-12425
2017-18				
Private Prices	116780	35785	45633	35362
Social Prices	120478	30210	45501	44767
Transfers	-3698	5575	132	-9404

Notes:

1. Social price is price of sugarcane in Pakistan worked back on the basis of export parity price of sugar.
2. Revenue, traded input cost and domestic factor cost derived from the original cost of production tables.

**PER ACRE REVENUE OF SUGARCANE, TRADED INPUTS AND DOMESTIC FACTORS
COST IN PUNJAB ESTIMATED ON THE BASIS OF PRIVATE (OPEN MARKET) AND SOCIAL PRICE
(BASIS - EXPORT PARITY PRICE OF SUGAR)**

Description	Revenue	Traded Inputs Cost	Domestic Factor Cost	Profit
----- Rupees per acre -----				
2013-14				
Private Prices	96076	33384	45773	16918
Social Prices	75351	28677	31889	14785
Transfers	20724	4707	13884	2132
2014-15				
Private Prices	89505	32818	50493	6194
Social Prices	68281	27936	35723	4622
Transfers	21224	4883	14770	1572
2015-16				
Private Prices	92106	32184	52118	7803
Social Prices	80018	27249	37188	15582
Transfers	12088	4936	14931	-7778
2016-17				
Private Prices	91800	27990	58295	5516
Social Prices	71586	24249	37970	9367
Transfers	20214	3741	20325	-3851
2017-18				
Private Prices	108000	28063	57913	22023
Social Prices	62388	28063	57566	-23242
Transfers	45612	0	347	45265

Notes:

1. Social price is price of sugarcane in Pakistan worked back on the basis of export parity price of sugar.
2. Revenue, traded input cost and domestic factor cost derived from the original cost of production at

**PER ACRE REVENUE OF SUGARCANE, TRADED INPUTS AND DOMESTIC FACTORS
COST IN SINDH ESTIMATED ON THE BASIS OF PRIVATE (OPEN MARKET) AND SOCIAL PRICES
(BASIS - EXPORT PARITY PRICE OF SUGAR)**

Description	Revenues	Traded Cost	Domestic Factors' Cost	Profits
----- Rupees per acre -----				
2013-14				
Private Prices	123032	41001	33289	48743
Social Prices	102577	35253	32608	34716
Transfers	20456	5748	681	14026
2014-15				
Private Prices	113568	40811	38485	34272
Social Prices	91450	34525	35632	21292
Transfers	22119	6286	2853	12980
2015-16				
Private Prices	113568	40559	40367	32642
Social Prices	102022	34496	37508	30018
Transfers	11546	6063	2859	2625
2016-17				
Private Prices	114244	36488	41051	36704
Social Prices	118455	30795	38531	49129
Transfers	-4211	5694	2520	-12425
2017-18				
Private Prices	135032	35785	45633	53614
Social Prices	120478	30210	45501	44767
Transfers	14554	5575	132	8848

Notes:

1. Social price is price of sugarcane in Pakistan worked back on the basis of export parity price of sugar.
2. Revenue, traded input cost and domestic factor cost derived from the original cost of production tax

PER CAPITA AVAILABILITY (CONSUMPTION OF SUGAR: 2014-15 TO 2016-17
(October - September)

S. No	Items	2014-15	2015-16	2016-17
		-----Thousands tonnes-----		
1	Opoening stocks as on 1st October	1197	319	1866
2	Production	5331	5115	7005
3	Imports	14	11	9
4	Export	580	398	306
5	Closing stocks as on 30th September	1362	1886	1886
6	Net availability (item 1+2+3-4-5)	4600	3161	6688
		-----Million-----		
7	Population	199.12	202.89	207.77
		-----Kgs per annum-----		
8	Per capita availability (consumption)	23.10	15.58	32.19
9	Average per capita availability Average (2014-15 to 2016-17)		23.62	

Sources:

1. For stocks and production:
2. For import and export:
3. For population of Pakistan:

Pakistan Sugar Mills Association, Islamabad.
Federal Bureau of Statistics, Karachi.
Economic Survey, 2017-18.

ANNEX- XII

**DOMESTIC AVERAGE WHOLESALE PRICES OF SUGAR IN MAJOR
DOMESTIC MARKETS: 2017 AND 2018**

Month	Lahore	Fasilabad	Karachi	Hyderabad	Peshawar	Average
2017						
	----- Rupees per 100 kgs -----					
January	6011	6068	6150	6100	6400	6146
February	6000	6040	6100	6100	6200	6088
March	5925	5539	5700	5650	5750	5713
April	5774	5508	5700	5700	5550	5646
May	5676	5309	5650	5500	5500	5534
June	5550	5175	5300	5400	5500	5385
July	5550	5187	5200	5100	5100	5227
August	5550	5060	5400	5200	5375	5317
September	5095	5550	5200	5100	5500	5289
October	5550	5082	5150	5100	5375	5251
November	5550	4950	5050	4860	5250	5132
December	5321	4950	5050	4960	5250	5106
Average	5629	5368	5471	5398	5563	5486
2018						
January	5000	5027	4950	4900	3700	4715
February	5000	4813	4750	4700	4850	4823
March	4804	4631	4600	4600	5000	4727
April	4750	4919	4850	4800	5200	4904
May	4750	4993	5100	5000	5200	5009
June	4750	5006	5000	4950	6250	5191
Average	4842	4898	4875	4825	5033	4895

- Sources:
1. Agriculture Marketing Information Services, Punjab, Lahore.
 2. Bureau of Supply and Prices, Sindh, Karachi.
 3. Agriculture Marketing Services, Peshawar, KPK.

**AVERAGE WHOLESALE PRICES OF SUGAR IN MAJOR DOMESTIC MARKETS:
2003-04 TO 2017-18 (October- September)**

Year	Lahore	Fasilabad	Karachi	Hyderabad	Peshawar	Average	Increase(+) decrease(-) in average price over Percent
	----- Rupees per 100 kgs-----						
2003-04	1813	1769	1788	1743	1853	1793	-
2004-05	2417	2410	2373	2345	2411	2391	33.35
2005-06	3359	3342	3243	3223	3349	3303	38.14
2006-07	2932	2901	2884	2818	2933	2894	-12.40
2007-08	2444	2410	2390	2346	2473	2413	-16.63
2008-09	4049	3997	3998	3938	4090	4014	66.39
2009-10	6203	6161	6138	6084	6276	6173	53.76
2010-11	6848	6706	6687	6895	6993	6826	10.58
2011-12	5326	5256	5055	5374	5350	5272	-22.75
2012-13	5117	5084	4977	4947	4772	4979	-5.56
2013-14	4942	4949	5050	5314	5113	5074	1.89
2014-15	5726	5634	5463	5529	5564	5583	10.04
2015-16	5694	5632	5562	5691	5678	5651	1.22
2016-17	6032	5889	6044	6006	6419	6049	7.04
2017-18 (Oct-Aug)	4988	4984	5000	4920	5283	5057	-16.40

Sources: 1. Agruculture Marketing Information Services, Punjab, Lahore.
2. Agriculture Marketing Services, Sindh, Hyderabad.
3. Agriculture Marketing Services, Peshawar, KPK.

AVERAGE INTERNATIONAL PRICES OF SUGAR: 2003-04 to 2017-18 (OCT-SEP)

Years Oct - Sep	ISA Daily price of Raw sugar (Fob and stowed Caribbean ports in bulk)		London Daily price of White sugar (Fob and stowed European ports in bags of 50 kgs)		Difference between White and raw sugar prices		
	US Cents/ lb	US\$/ tonne	US Cents/ lb	US\$/ tonne	US Cents/ lb	US\$/ tonne	Per cent of White Sugar
2005-06	14.84	327.14	18.34	407.75	3.50	80.61	19.10
2006-07	10.43	229.90	14.80	326.82	4.38	96.92	29.55
2007-08	12.38	273.02	15.62	344.44	3.24	71.42	20.73
2008-09	15.42	340.02	18.94	417.56	3.52	77.54	18.57
2009-10	20.41	450.03	26.07	574.68	4.86	107.23	17.66
2010-11	26.56	585.45	32.29	711.93	5.74	126.49	17.77
2011-12	22.68	499.96	27.54	607.20	4.86	107.23	17.66
2012-13	18.12	399.56	23.96	528.15	5.83	128.58	24.35
2013-14	17.42	384.02	20.96	461.99	3.54	77.97	16.88
2014-15	13.96	307.69	17.19	378.98	3.23	71.29	18.81
2015-16	16.56	370.19	20.89	460.45	3.23	71.29	18.81
2016-17	17.07	376.40	20.76	464.16	3.68	87.75	17.75
2017-18	12.96	285.62	15.84	349.12	2.88	63.50	18.19

Source: International Sugar Organization (ISO), London.

IMPORT PARITY PRICES OF SUGARCANE AT MILL-GATE ON THE BASIS OF FOB (LONDON)

PRICE OF WHITE SUGAR

S.No	Item	September 2018		2017- 18 (Oct-Sept)		During 2014-15 to 2016-17	
-----US \$ per tonne-----							
1.	Average fob (London) price	371.92		464.16		433.81	
2.	Freight charges upto Karachi	60		60		60	
3.	C & f cost at Karachi port	432		524		494	
4.	Exchange rate (Rs/\$)	105.50		104.60		105.50	
-----Rs per tonne-----							
5.	C & f cost at Karachi port (Pak rupees)	45668		54827		52097	
6.	Marine insurance @ 0.23 % of c & f cost	105		126		120	
7.	Cif cost at Karachi port	45672		54953		52217	
8.	Landing charges @1% of Cif Value	457		550		522	
9.	L.C opening charges @0.04% of C&F Value	18		22		21	
10.	Bank services charges @0.1% of C&F value	46		55		52	
11.	Provision of shortage & unforeseen losses @0.25% of C&F	114		137		130	
12.	Stevedoring charges	725		725		725	
13.	Clearing & forwarded charges	8		8		8	
14.	Misc: Exp 0.05% of of C&F value	23		27		26	
15.	Wharfage & Weightment	54		54		54	
16.	Importer's profit 2% of C&F value	911		1097		1042	
17.	Transport charges for up country	2200		2200		2200	
18.	Incidental charges incurred on imported sugar	4556		4874		4780	
19.	Ex-mill/ market cost of imported sugar	50228		59828		55997	
		Punjab	Sindh	Punjab	Sindh	Punjab	Sindh
20.	Processing cost of sugar (a)	17077	17077	20341	20341	19379	19379
21.	Value of cane to produce one tonne of sugar (item 19-item 20)	33150	33150	39486	39486	37618	37618
22.	Provincial base sugar recovery (Percent)	9.77	10.16	9.77	10.16	9.77	10.16
23.	Quantity of cane in tonnes required to produce one tonne of sugar ((100/ item 22)	10.24	9.84	10.24	9.84	10.24	9.84
24.	Price of one tonne of sugarcane (item 21/item 23)	3238.80	3368.08	3857.80	4011.80	3675.29	3822.00
25.	Price of 40 kgs of cane	129.55	134.72	154.31	160.47	147.01	162.88

Sources:

- i) For average fob (London) price: Annex IX
- ii) For freight, incidentals and duties: Trading Corporation of Pakistan, Karachi.

Note

- (a) Ratio of cost of cane to processing cost has been estimated at 66:34 from publication " Cost of Production of Sugar " jointly prepared in 1996 by APCo and Business & Consultancy Services.

**EXPORT PARITY PRICES OF SUGARCANE AT MILL-GATE ON THE BASIS OF (FOB LONDON)
PRICES OF WHITE SUGAR**

S.No	Item	September 2018		2017- 18 (Oct-Sept)		During 2014-15 to 2016-17	
		US \$ per tonne					
1.	Average fob (London) price	371.92		464.16		433.81	
2.	Exchange rate (Rs/\$)	105.50		105.50		105.50	
		----- Rs. per tonne -----					
3.	Average fob Karachi price (assuming equivalent to fob London price)	39238		48969		45767	
4.	Transport charges from interior Sindh to port, special packing, inspection transit insurance, loading and unloading, clearing and forwarding and port terminal charges	1800		1800		1800	
5.	Bank commission @ 1.25 % of fob price	490		612		572	
6.	Inspection charges	429		429		429	
7.	Ex-mill price of sugar (item 3 minus items 4 through 6)	36518		46128		42966	
		Punjab	Sindh	Punjab	Sindh	Punjab	Sindh
8.	Processing cost of sugar (a)	12416	12416	15683	15683	14608	14608
9.	Value of cane to produce one tonne of sugar (item 19-item 20)	24102	24102	30444	30444	28357	28357
10.	Provincial base sugar recovery (Percent)	9.77	10.16	9.77	10.16	9.77	10.16
11.	Quantity of cane in tonnes required to produce one tonne of sugar ((100/ item 10)	10.24	9.84	10.24	9.84	10.24	9.84
12.	Price of one tonne of sugarcane (item 9/ item 11)	2355	2448.76	2974.41	3093.14	2770.53	2881.12
13.	Price of 40 kgs of cane	94.19	97.95	118.98	123.73	110.82	115.24

Notes:

- i) For average fob (London) price: Annex IX.
- ii) For incidentals and duties: Trading Corporation of Pakistan, Karachi.
- ii) For transport charges: Arian Cargo Transport Agency, Karachi.

Note

- (a) Ratio of cost of cane to processing cost has been estimated at 66:34 from publication " Cost of Production of Sugar " jointly prepared in 1996 by APCOM and Business & Consultancy Services.

**MILL-GATE PRICES OF SUGARCANE WORKED BACK FROM THE EXPECTED WHOLESALE MARKET PRICES
OF SUGAR DURING 2017-18**

S.No	Item	WORKED BACK PRICES OF SUGARCANE					
		-----Rupees per tonne-----					
1.	Average wholesale market prices of sugar (a)	55000		60000		65000	
2.	Wholesale dealer margin @5% on net price	2434		2655		2876	
3.	Federal excise duty @ 8%	3894		4248		4602	
4.	Net price of sugar (items 1-2-3)	48673		53097		57522	
		Punjab	Sindh	Punjab	Sindh	Punjab	Sindh
5.	Processing cost of sugar (a)	16549	16549	18053	18053	19558	19558
6.	Value of cane to produce one tonne of sugar (item 4-item 5)	32124	32124	35044	35044	37965	37965
7.	Provincial base sugar recovery (Percent)	9.77	10.16	9.77	10.16	9.77	10.16
8.	Quantity of cane in tonnes required to produce one tonne of sugar ((100/ item 7)	10.24	9.84	10.24	9.84	10.24	9.84
9.	Price of one tonne of sugarcane (item 6/item 8)	3139	3264	3424	3560	3709	3857
10.	Price of 40 kgs of cane	125.54	130.55	136.95	142.42	148.37	154.29

Note

- (a) Ratio of cost of cane to processing cost has been estimated at 66:34 from publication " Cost of Production of Sugar " jointly prepared in 1996 by APCom and Business & Consultancy Services, Islamabad

Sources:

- For prices: Annex-VIII
For FED: FBR, Islamabad.