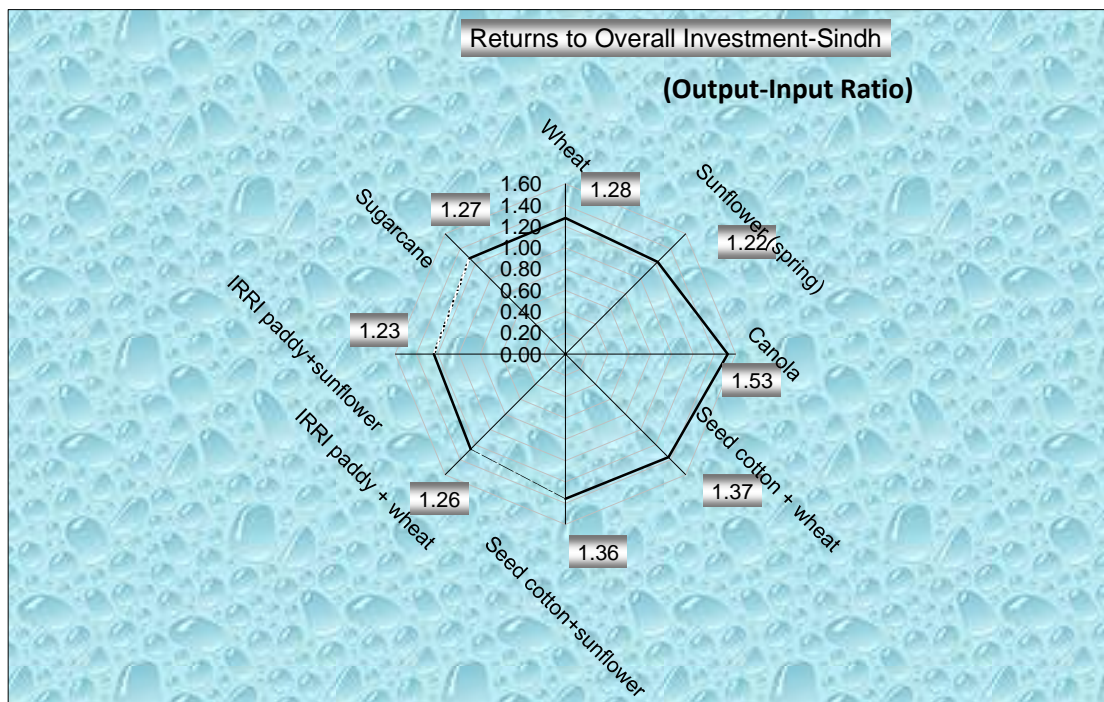




WHEAT POLICY ANALYSIS FOR 2022-23 CROP



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GOVERNMENT OF PAKISTAN
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Preface

Wheat Policy Analysis is aimed to provide information on various economic aspects of the wheat crop, crucial in the formulation of the Minimum Support Price Policy. A report of this kind is always important because a broader audience benefits, ranging from policy makers to planners, academia, researchers, student community, growers / growers' associations, chambers of agriculture, traders, etc.

The single title of the report may not lengthily reflect the scope and purpose, unless the reader travels through the important elements of the report. The document contains several important factors as analysis of wheat crop. Many portions are relevant; however, a few economic factors have been described as the building blocks which provide useful insights into the Minimum Support Price Policy perspective. It is partly uncontrollable curiosity of the stakeholders and partly the practical needs of policy makers that this report is there to give answers to the questions on determining of producer price of the commodity.

We as API team, collectively owe thanks to all the Committee members and participants of the various meetings for their valuable discussion and input, Federal and Provincial Government Departments for sharing of information, without all that it would have not been possible to complete the report.

API greatly appreciates the feedback and suggestions from all the four corners and looking forward for a continued partnership in the formulation of price policy analyses and producing of important reports concerning agriculture and food security.

(Abdul Karim)
Director General

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Acronym**Abbreviations**

AARI	Ayub Agriculture Research Institute
AJ&K	Azad Jammu and Kashmir
API	Agriculture Policy Institute
APW	Australian Premium White
C&F	Cost and Freight
COP	Cost of Production
CPI	Consumer Price Index
CWRS	Canada Western Red Spring
DAP	Di Ammonium Phosphate
DRC	Domestic Resource Cost
ECC	Economic Coordination Committee (of the Cabinet)
E&M	Economics and Marketing
EPC	Effective Protection Coefficient
EU	European Union
FAO	Food and Agriculture Organization
PBS	Pakistan Bureau of Statistics
FOB	Freight on Board
FYM	Farm Yard Manure
GDP	Gross Domestic Product
GMR	Grain Market Report
GST	General Sales Tax
HIES	Household Integrated Economic Survey
HRW	Hard Red Winter
HSD	High Speed Diesel
HYVs	High Yielding Varieties
IRRI	International Rice Research Institute
KPK	Khyber Pakhtunkhwa
N	Nitrogen
NAs	Northern Areas
NFDC	National Fertilizer Development Centre
NPC	Nominal Protection Coefficient
P	Phosphatic
PAM	Policy Analysis Matrix
PARC	Pakistan Agricultural Research Council
PASSCO	Pakistan Agricultural Storage and Services Corporation
USA	United States of America
USDA	United States Department of Agriculture
MSP	Minimum Support Price
PSP	Profitable Support Price

WHEAT POLICY ANALYSIS FOR 2022-23 CROP

SUMMARY OF FINDINGS AND RECOMMENDATIONS

- Findings

A brief summary of the key findings and recommendations are given below:

Area and Production

- Punjab and Sindh, sow wheat on 87 per cent of the area and contribute about 91 per cent in wheat production. While the share of Khyber Pakhtunkhwa and Balochistan is 13.3 per cent in area and 9 per cent in production.
- During the decade ending 2021-22, wheat production has been observed a sluggish growth of 0.8 per cent per annum, while area embraced by 0.1 per cent.
- Wheat production from 2021-22 crop is reported at 26.394 million tonnes, showing 3.9 per cent lower than the production of 27.464 million tonnes in 2020-21.
- Since 2010, 22 high yielding wheat varieties have been developed by Research Institutes for the irrigated and rainfed areas with an estimated yield potential ranging 5000-8000 kgs per hectare. However, the yield during the last decade improved mainly by 0.8 per cent.

Domestic Requirements

- Based on annual per capita availability of 115 kgs per annum, the domestic requirement of wheat for human consumption comes to 27.29 million tonnes for the year 2022-23.
- Assuming the per capita consumption of PBS-HIES at 84 kgs per annum, the domestic requirement for human consumption comes to 19.93 million tonnes.
- Including one million tonnes as food security reserve and 2.67 million tonnes for seed, feed and wastage, the total domestic requirement will range between 23.6 and 30.96 million tonnes. Adding the last year stocks, the surplus estimates at (-)2.26 to 4.86 million tonnes, respectively.

Domestic Prices

- Monthly average market prices of wheat for 2021-22 crop higher than the support price in Punjab and Sindh.
- The wholesale prices of wheat averaged at Rs 2,424 and Rs. 2,504 per 40 kgs in the Punjab and Sindh respectively during the post harvest season in major producing areas.

Cost of Production

- In Punjab, the net cost of wheat cultivation for 2022-23 season is estimated at Rs 66,404 per acre including land rent.

- The cost of production at market / procurement centre level would be Rs. 2,222 per 40 kgs for 2022-23, which is higher by Rs. 545 than the corresponding COP of Rs 1,677 in 2021-22.
- In Sindh, the net cost of wheat cultivation for 2022-23 crop is probable at Rs. 67,827 per acre including land rent.
- The cost of production at market/procurement centre level would come to Rs. 2,105 per 40 kgs, showing increase of Rs. 432 over the last year.

Economics of Wheat and Competing Crops

- Wheat crop has shown relatively lower performance during 2021-22 and farmers received a small margin over the cost of wheat production (13 %). In Punjab, Wheat crop has performed lower against sunflower in terms of output input ratio, however, better in terms of returns to irrigation water, where Sunflower, has out-performed wheat in rest of the economic criteria. Canola crop has given better rewards over wheat and sunflower in terms of returns to overall investment and returns to purchased inputs.
- Under indirect competition scenario, wheat combination with rice varieties performed lower in terms of all economic criteria. The rice combinations were out-competed by sugarcane in term of all economic criteria.
- In Sindh, the returns to overall investment in wheat crop remained lower than “rabi” oilseed crop sunflower and canola during 2021-22. However, wheat has performed better than the two oilseeds with big margin in respect of other economic indicators like crop duration and irrigation water.
- In case of indirect competition a mixed situation is being observed across the crop combinations. Wheat combination with cotton out-performed sugarcane in terms of returns to crop duration and irrigation water used.

Economics of Fertilizer Use

- The quantity of wheat needed to buy one nutrient tonne of Nitrogenous fertilizer has fluctuated from 1.67 to 2.90 tonnes during the decade of 2011 to 2022.
- During 2021-22, the parity ratio between market prices of Nitrogen and wheat was not in favour due to high prices of Nitrogen fertilizer and 1.69 units of wheat were required to buy one unit of Nitrogenous fertilizer, a nominal improvement over previous year.
- The quantity of wheat needed to buy one nutrient tonne of Phosphatic fertilizer has fluctuated between 1.16 to 6.26 tonnes during 2011 to 2022.
- During 2021-22, the parity ratio between market prices of Phosphatic and wheat purchasing power has worsend further and around 2.60 units of wheat could purchase one unit of P fertilizer.

Nominal and Real Support Prices

- The nominal support prices of wheat during 2015-16 to 2021-22 have experienced an overall increased of 69.23 per cent, while the real support prices have increased by 9.87 per cent over the base year.

Nominal and Real Market Prices

- The nominal market prices of wheat have shown an overall increase of 108 per cent, against the base year, while the real market prices have shown, increased by 35 per cent due to rise in CPI by 54.02%.

World Production and Prices

- World wheat production estimated at 781 million tonnes in 2021-22 is higher by 7 million tonnes than the last year, while it is forecast at 770 million tonnes in 2022-23.
- The closing stocks at 279 million tonnes in 2020-21 increased to 282 million tonnes in 2021-22 and are forecast at 272 million tonnes in 2022-23, a decline of ten million tonnes over the last year stocks.
- The average Fob (gulf) prices of US Hard Red Winter (HRW) wheat fluctuated widely and rising as high as US \$ 347 per tonne in 2012-13. The price decreased to US \$ 197 per tonne in 2016-17, however, showed upward trend and reached at US \$ 399 per tonne in 2021-22.
- During 2022-23 (July-September), international prices of US No. 2 HRW wheat have averaged at US \$ 383 per tonne and that of SRW at US \$ 334 per tonne.

Import / Export Parity Prices

- Based on the Fob price during 2022-23 (July- Sep), the import parity prices of US \$ 2 HRW calculate to Rs. 4,746 per 40 kgs at Multan and Rs. 4,347 per 40 kgs at Karachi while for SRW, the prices worked out at Rs. 4,377 at Multan and Rs. 3,978 per 40 at Karachi. These prices were relatively higher during 2022-23.
- Based on the average Fob (gulf) price during 2019-20 to 2021-22, the import parity price of US \$ HRW works to Rs. 3,837 per 40 kgs at Multan, while Rs. 3,438 per 40 kgs at Karachi.
- Based on the futures prices of Black Sea wheat during (Oct-Dec 2022-23), the import parity prices work out at Rs. 3,637 to Rs. 3,694/40 kg at Karachi. However, the import parity prices of Black Sea wheat based on Actual import of TCP at Karachi worked out at Rs 3,919/40 kg.
- Based on the average Fob (gulf) price of US HRW and US SRW wheat during 2021-22, the export parity price works to Rs 3,178 and 2,692 per 40 kgs at procurment centre level. The export parity price calculates to Rs. 2,267 and 2,100 per 40 kgs respectively on the basis of average fob price during 2019-20 to 2021-22. For 2022-23 (July-Sep.), these prices are equivalent to Rs. 3,116 and 2,771 for HRW and SRW, respectively.

Economic Efficiency

- Economic efficiency of resource use in wheat production has been evaluated by estimating the Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC) and Domestic Resource Cost (DRC).
- The NPC values in Punjab under import scenario ranged between 0.50 to 1.12 in Punjab and 0.55 to 1.12 in Sindh.
- The EPCs under import scenario, in Punjab remained less than one due to less increase in input prices as compared with the price of wheat
- Under export scenario, the NPC values are greater than one, which indicate that domestic input prices and open market prices of wheat do not offer favorable prospects for wheat export from Pakistan.
- The DRCs in Punjab and Sindh under import scenario are less than one, except 2015-16 and 2016-17, during the period, indicating a Pakistan's Comparative Advantage in domestic wheat production rather than import. While under export scenario, DRCs coefficients do not indicate Comparative Advantage being greater than one; thus implying that Pakistan should not promote wheat production for export.

World Comparison

- Pakistan is the 8th largest wheat producer in terms of area and production but ranks at 65th position in terms of yield per hectare (FAO).
- Among the major wheat producing countries, Pakistan's position falls at the bottom in the context of yield. This gap in yield can be narrowed through adoption of optimal technology.

Impact of Support Price on CPI and Household Expenditure

- In case the support price of wheat is enhanced by Rs. 100 per 40 kgs over the existing level of Rs. 2,200 per 40 kgs, the CPI would likely to rise by 0.28 per cent.
- Likewise, the increase of Rs. 100 per 40 kgs over the existing support price would bring additional expenditure of Rs. 862 per capita per year or Rs. 5,379 per household.

Policy Options

Based on the analysis of relevant factors covered in the main text of the Report, the likely policy options for wheat 2022-23 crop would be as under:

Base		Likely price of domestic wheat at procurement center		
		Rs per 40 kgs		
		HRW	SRW	
1.	Export parity price on the basis of:			
	a)	Fob (Gulf) prices of US Hard Red Winter (HRW) & Soft Red Winter (SRW) wheat during 2021-22, if exported from Multan	3,178	2,798
	b)	Fob (Gulf) average prices of US HRW & SRW wheat during 2020-21 to 2021-22, if exported from Multan	2,267	2,100
	c)	Fob (Gulf) prices of US HRW & SRW wheat during 2022-23 (July), if exported from Multan	3,116	2,771
2.	Import parity price on the basis of:			
	a)	Fob (Gulf) prices of US HRW & SRW wheat during 2021-22, if consumed at:		
		- Multan	4,812	4,292
		- Karachi	4,413	3,892
	b)	Fob (gulf) price of US HRW & SRW wheat during 2019-20 to 2021-22, if consumed at:		
		- Multan	3,837	3,657
		- Karachi	3,438	3,258
	c)	Fob (Gulf) price of US HRW & SRW wheat during 2022-23 (July), if consumed at:		
		- Multan	4,064	4,417
		- Karachi	4,665	3,694
3.	Monthly average wholesale market prices of wheat in major producing areas during the post-harvest period of 2021-22 crop:			
		- Punjab		2,424
		- Sindh		2,504
4.	Cost of production estimates at market / procurement center level for 2022-23 crop:			
		- Punjab		2,222
		- Sindh		2,105
5.	Cost of production estimated by Prime Minister's Task Force on Agriculture:			
		- Average Farmer		2,495.39
		- Resourceful Farmer		2,427.21
6.	Import Parity of Actual Imports by TCP			
		- if consumed at Multan		4,315
		- if consumed at Karachi		3,919

Recommendations

In view of the field information, consultation with the stakeholders in the API Committee meeting on Wheat and analysis of relevant factors, the following recommendations are made regarding the support price, improving productivity and marketing of 2022-23 wheat crop:

Support Price

- Sustainable growth in wheat production is essential as the crop is not only the staple food but also the major food security concern of the economy.
- In view of the current situation of the economy due to devastating floods and resultant food inflation and other food security concerns, the Government may like to consider timely announcing of the Support Price of Wheat.
- The Prime Minister's Task Force on Agriculture has suggested announcing of the profitable support price (PSP), replacing the term Minimum Support Price, mainly to incentivize the grower for a higher yield of 40 mounds (1600 kg) per acre.
- The Support Price provides a reference point for procurement by the public sector agencies to meet the food security requirements of the country.
- The PSP is expected to provide some profit margin over the cost of production for improving productivity through balanced input use, better management and optimal technology adoption.
- It is important to ensure that in view of free market and active role of private sector, the actual incentive to wheat growers should come through the market forces.
- The Government's policy of encouraging the role of private sector in wheat marketing needs to be strengthened ensuring that a strong regulatory mechanism is in place.
- PASSCO and Provincial Food Departments being the implementing agencies should make prior arrangements for wheat procurement and enter in the field well in time, especially in Sindh province where the harvesting starts early.

Improving Productivity

- The post-flood situation needs to be reviewed and a comprehensive plan for rehabilitation of agricultural land, devised by the Research and Extension Departments to ensure that the crop productivity is sustained.
- Agriculture Extension Departments should annually publicise the seed availability of new high yielding varieties well before the sowing season in collaboration with the Research Institutes.
- Impact of climate change on land use, crop maturity and cropping patterns need to be assessed and mitigation measures be adopted by the Provinces.
- Coordinated efforts should be made for fast tracking the national wheat breeding programme for resistant varieties to various key issues like: stem rust, drought, salinity, heat and frost.

- Molecular breeding for development of low input but high responsive varieties of wheat should be strengthened through enhance's capacity of research institutions and extension services.
- Awareness campaign should be conducted by the provincial governments for rational use of chemical inputs through regular soil and water testing in coordination with the private sector.
- Advanced technologies like laser levelling, zero tillage and high efficiency irrigation systems should be promoted, encouraging small holders with provision of such technologies at village/tehsil level.
- There should be a national programme for multiplication and dissemination of seed - fertilizer drills, on cost sharing basis to improve the fertilizer use efficiency in case of phosphate.
- Provincial Governments emphasize on timely availability of certified seed and grading of farm seed for wheat cultivation by private sector and of farmers' own seed.
- Provinces take measures for strict quality control to check adulteration of weedicides, herbicides, pesticides and fertilizer to enhance their efficiency.
- For the efficient use of fertilizer, the Provincial Governments should control the black marketing of DAP and Urea to keep the prices at optimal level to maintain certain level of ratio in the application of fertilizers.
- The Seed Act may be implemented in true spirit and the private seed companies selling spurious and fake seeds may be strictly penalized.

Improving Statistics and Marketing

- Establishing of an Input Price Regulatory Authority at Provincial level will help control the input prices and other quality related matters.
- Value addition in wheat sector would help improve its export competitiveness in the world market.
- A committee of experts be established at Provincial level to examine the current system of crop estimation and suggest ways and means to improve the provincial crop estimates.
- Storage capacity needs to be enhanced both in public and private sectors, particularly at grassroots level.
- The strategic reserve of two million tonnes needs to be maintained for the sake of food security for the masses.
- In line with the Industry sector, agricultural credit should be offered at self-terms and reduced mark up by the ZTBL and other Commercial Banks.

WHEAT POLICY ANALYSIS FOR 2022-23 CROP

INTRODUCTION

Wheat, being the staple diet, occupies central place in the food security policy. On average (2019-22), wheat is cultivated on 8.98 million hectares with an average production of about 26.37 million tonnes. Production of Wheat has been increasing by 0.8 percent average annual growth over the last decade (owing mainly to the improvement in yield by 0.7 percent, while the area has been observed expanding by 0.1 percent. Being the food security commodity, a small change in the price of wheat and its availability pose positive or negative impacts on consumers, especially on the poor segments of population.

2. For the year 2021-22, wheat crop has been estimated at 26.39 million tonnes¹, which is a drop (4 %) over the last year's production, mainly for the squeezed production in Punjab (4.2%) and Sindh (7%).

3. According to the International Grains Council, London, the world wheat production for 2022-23 is projected at 770 million tonnes², which is 1.4% percent lower than the 2021-22 estimates. The 282 million tonnes opening stocks (higher by 3 million tonnes) would help the total supply to retain at 2020-21 level of 1.05 billion tonnes. The global consumption is projected at 780 million tonnes in 2022-23, an increase of 3 million tonnes.

4. By virtue of huge global total supply, the closing stocks of wheat during 2021-22 are estimated at 282 million tonnes, around 3 million tonnes more than the current year level. In 2022-23, International trade of wheat is forecasted at 194 million tonnes. In summary, the wheat 2022-23 forecast shows a slightly downward trend in major indicators like production, total supply and closing stocks. While the opening stocks and total consumption are expected to increase over the 2021-22 level. This global wheat scenario would have given the signal of a comfortable crop situation and a slower variation and stability in the price of the commodity during 2022-23. However, the Russia – Ukrain war has changed the situation altogether and the market indicators for wheat and other food commodities are unstable, prices have gone higher.

5. The price policy recommendations for 2022-23 wheat crop have been formulated based on the following important activities undertaken by the API:

- i) An annual field survey was carried out in the important wheat growing areas of Punjab during 24-30 June and in Sindh, during 1-7 July, 2022 to update the data on prices of inputs, hiring rates of farm operations and marketing cost.

¹ Survey of Pakistan 2021-22.

² International Grains Council, London , GMR, July 2022.

- ii) The data on area and production, stocks, trade and prices; both domestic and global, and Consumer Price Index were collected from various agencies and published material. The producer prices of wheat in selected countries were collected from various national and international agencies and through internet. These data have been analyzed to reflect the domestic and international position on various aspects of wheat production and marketing.

6. Wheat being the staple and a major food security crop of the country, its pricing is a complex phenomenon. Conflicting interests of various stakeholders like growers, consumers, millers, etc play important role in determining the price in the market. In view of fluctuating input prices and increasing cost of production, the farmers argue for higher output prices otherwise wheat farming may not be a viable proposition. Resultant increased producer prices of wheat, in turn, escalate the consumer prices, leading to food inflation in the economy, in view of its high weight in the average household budget. Accordingly, the governments hesitate to enhance consumer prices of wheat to their economic levels and subsidize the issue prices at considerable cost to the public exchequer.

7. Wheat is one of the sensitive food commodities, thus a slight change in its price and availability does have a positive or negative impact on consumers, especially on the poor segments of the population. Hence, the government has been implementing a Safety Net for food assistance to the poorest to save them from the adverse effects of hike in prices of staple food like wheat and other essential food items commodities.

2. SOWING AND HARESTING TIMES OF WHEAT

8. A wide-ranging schedule of wheat sowing for various ecological zones in the country, as recommended by the Pakistan Agricultural Research Council, is presented in Table-1:

Table-1: Recommended Sowing and Harvesting Times of Wheat

Provinces		Times
Punjab		
i)	Southern	1 st November to 30 th December
ii)	Central	1 st November to 15 th December
iii)	Northern:	
a)	Irrigated	1 st November to 15 th December
b)	Un-irrigated	20 th October to 15 th November
Sindh		
i)	Southern	1 st November to 25 th December
ii)	Northern	1 st November to 31 st December
Khyber Pakhtunkhwa		
i)	Plain area	25 th October to 15 th December
ii)	Hilly area	1 st November to 15 th December
Balochistan		
i)	Upper	1 st October to 20 th February
ii)	Plain	1 st November to 15 th December

Source: PARC, Islamabad.

9. In the Punjab, wheat sowing in the irrigated areas generally starts from 1st November and extends upto end of December while in barani areas it begins from 20th October and continues upto 15th November.

10. In Sindh, wheat sowing commences from 1st November and goes upto the end of December.

11. In the Khyber Pakhtunkhwa, wheat is sown from 25th October to 15th December in plain areas and 1st November to 15th December in hilly areas.

12. In Balochistan, wheat sowing starts in advance than other provinces. It begins from 1st October in upper part of the province and goes upto 20th February while in plain areas, sowing times of wheat ranges from 1st November to 15th December.

13. Normally in Pakistan, wheat harvesting starts from end of March in south and continues till end of July in northern parts. Harvesting of wheat depends on the climatic conditions and maturing time of varieties sown. By and large, it starts in March/April and continues up to May, depending upon the sowing time, management practices, climatic conditions and varieties.

3. REVIEW OF 2021-22 CROP

3.1 Provincial Shares in Area and Production

14. Based on 3-year average ending 2020-22, the Punjab and Sindh contribute about 76.3 and 14.7 per cent in total wheat production while the shares of the KPK and Baluchistan are around 4.9 and 4.1 per cent, respectively. The provincial shares of area and production are presented in Table-2 and depicted in Figures 1 & 2, respectively.

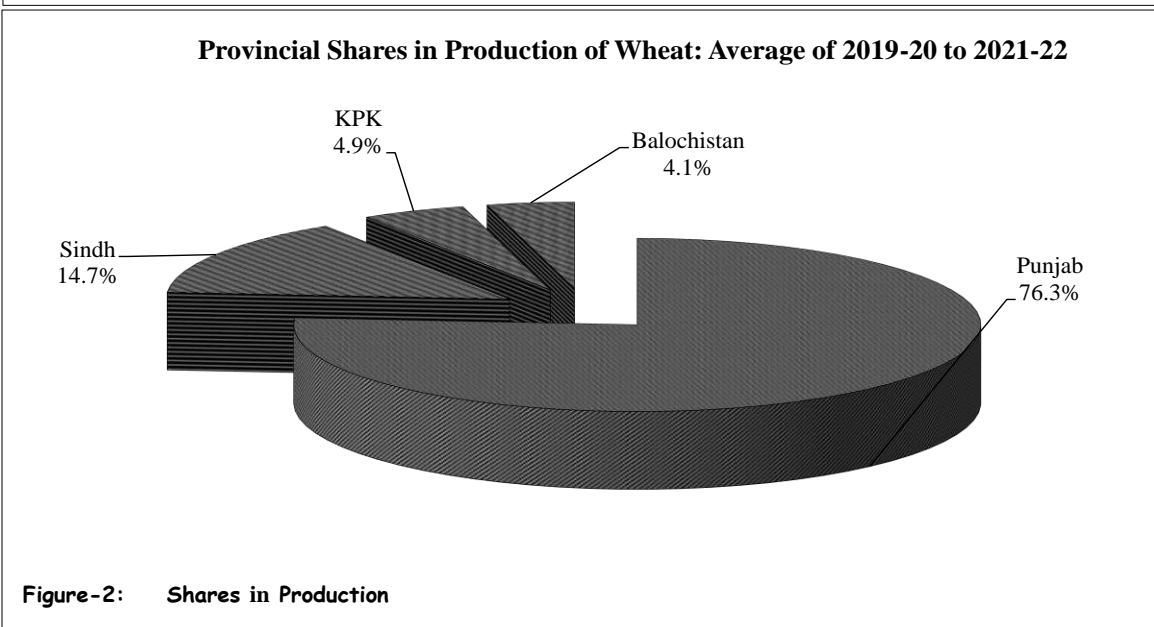
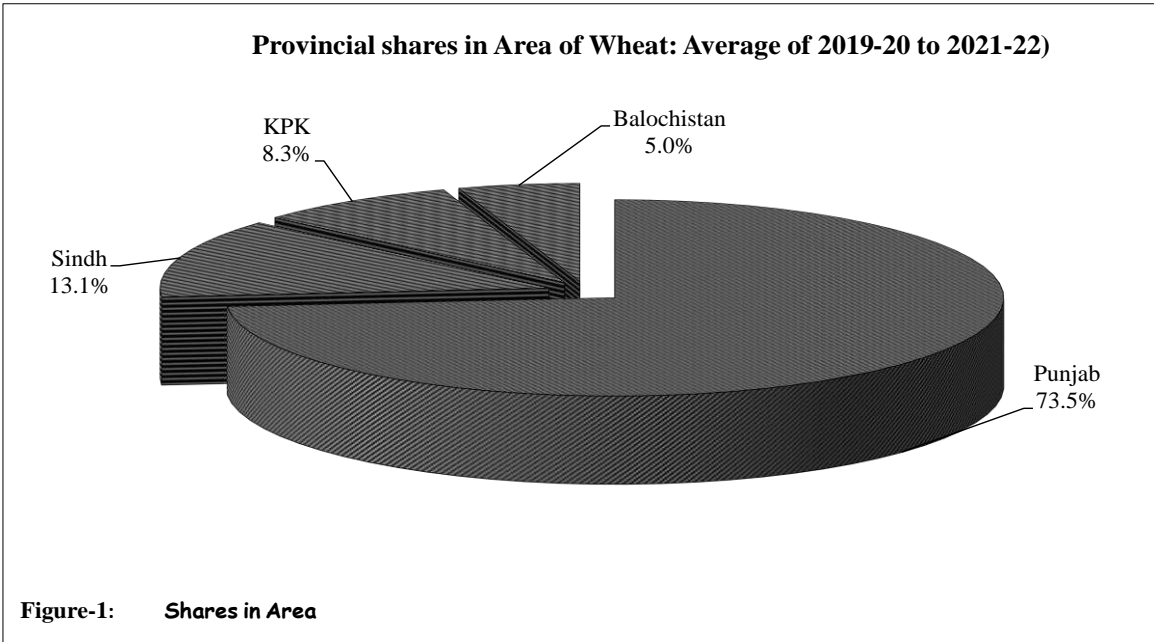
15. Around 87.1 per cent of wheat acreage is cultivated under irrigated conditions which contribute 93.4 per cent of wheat production in the country.

Table-2: Provincial Shares in Area and Production of Wheat
(Average of 2019-20 to 2021-22)

Item/Country/ Province	Total	Pakistan	Punjab	Sindh	KPK	Balochistan
	000 hact.	----- Per cent -----				
A. Area						
Total	8,983.2 (22,198.3)	100.0	73.5	13.1	8.3	5.0
Irrigated	7,827.1 (19,341.6)	87.1	65.6	12.7	4.0	4.8
Un-irrigated	1,156.0 (2,856.7)	12.9	8.0	0.3	4.3	0.2
B. Production						
	000 tonnes	----- Per cent -----				
Total	26,368.4	100.0	76.3	14.7	4.9	4.1
Irrigated	24,622.4	93.4	71.9	14.5	3.0	4.0
Un-irrigated	1,746.1	6.6	4.4	0.2	1.9	0.1

Note: Figures in parentheses are thousand acres.

Source: Worked out from Annex-I.



3.2 Long-term Changes: 2011-12 to 2021-22

16. During the decade ending 2021-22, wheat production at country level has surged @ 0.8 per cent per annum owing to 0.7 per cent improvement in yield and 0.1 per cent expansion in area. In the Punjab, wheat production has increased @ 0.8 per cent annually due to 1.0 per cent improvement in yield and 0.2 per cent acreage contraction. In Sindh, wheat production has also risen @ 0.3 per cent per annum mainly due to improvement of area by 0.9 per cent though the yield declined by 0.6 per cent. Details of wheat area, yield and production by province are presented in Table-3.

Table-3: Average Annual Growth Rates of Area, Yield and Production of Wheat: 2011-12 to 2021-22

Country/ Province	Area	Yield	Production
	----- Per cent per annum -----		
Pakistan	0.1	0.7	0.8
Punjab	-0.2	1.0	0.8
Sindh	0.9	-0.6	0.3
KPK	0.2	0.6	0.8
Balochistan	2.0	1.2	3.3

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

3.3 Medium Term Changes: 2016-17 to 2021-22

17. The annual growth rates for the period 2016-17 to 2021-22 show that the wheat production has increased @ 0.7 per cent by virtue of 0.3 per cent improvement in yield and the acreage by 0.4 per cent at the country level. Provincial growth rates for all three indicators are presented in Table-4.

Table-4: Average Annual Growth Rates of Area, Yield and Production of Wheat: 2016-17 to 2021-22

Country/Province	Area	Yield	Production
	----- Per cent per annum -----		
Pakistan	0.4	0.3	0.7
Punjab	0.0	0.6	0.6
Sindh	1.2	-0.8	0.4
KPK	0.3	-0.3	0.0
Balochistan	4.3	1.5	5.9

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

3.4 Short-term Changes: 2020-21 Vs 2021-22

18. Wheat production from 2021-22 crop is reported at 26.394 million tonnes at country level, showing 3.9 per cent decrease over 27.464 million tonnes in 2020-21. This reduced production is mainly attributed to shrinking of area and a decline in the yield by 2.1 and 1.8 percent respectively, as compared to the last year. The province wise data on area, yield and production of wheat are presented in Table-5 and also depicted in Figures 3 and 4.

Table-5: Area, Yield and Production of Wheat: 2020-21 and 2021-22 Crop

Country/ Province	Area		Changes	Yield per hectare		Changes	Production		Changes
	2020-21	2021-22		2020-21	2021-22		2020-21	2021-22	
	-- 000 hectares --		Per cent	-----Kgs ----		Per cent	-- 000 tonnes --	Per cent	
Pakistan	9,168.3	8,976.5	-2.1	2,996	2,940	-1.8	27,464.1	26,393.7	-3.9
Punjab	6,746.0	6,559.8	-2.8	3,098	3,054	-1.4	20,900.0	20,032.0	-4.2
Sindh	1,202.5	1,181.7	-1.7	3,362	3,182	-5.4	4,043.2	3,759.7	-7.0
KPK	761.8	760.9	-0.1	1,787	1,815	1.5	1,361.6	1,381.0	1.4
Baluchistan	458.0	474.1	3.5	2,531	2,575	1.7	1,159.3	1,221.0	5.3

Source: Annex-I.

3.5 Important Wheat Producing Districts

19. The only Bahawalnagar and Rahim Yar Khan districts are on the top in wheat production in Pakistan producing more than one million tonnes of wheat per annum. Besides, districts producing more than 500 thousand tonnes per annum are Bahawalpur, Jhang, Muzaffargarh, Faisalabad, Layyah, Khanewal, Rajanpur, D.G Khan, Gujranwala, Sheikhpura, Vehari, Lodhran, Multan, Sargodha, Okara, Mianwali and T.T. Singh. These 19 districts produce 54 per cent of total wheat production in Pakistan while their share in area is estimated at 49 per cent. Bakhar, Hafizabad, Kasur, Nankana Sahib, Sahiwal, Sialkot, Pakpattan, and M.B.Din from Punjab and Shaheed Banazirabad, Naushero Feroz, Khairpur, Ghotki and Sanghar from Sindh, D.I khan and Swat from KPK, Nasirabad, Jaffarabad, Jhal Magsi and Khuzdar from Baluchistan are other important wheat producing districts in the country. District-wise production shares are given in Annex-III.

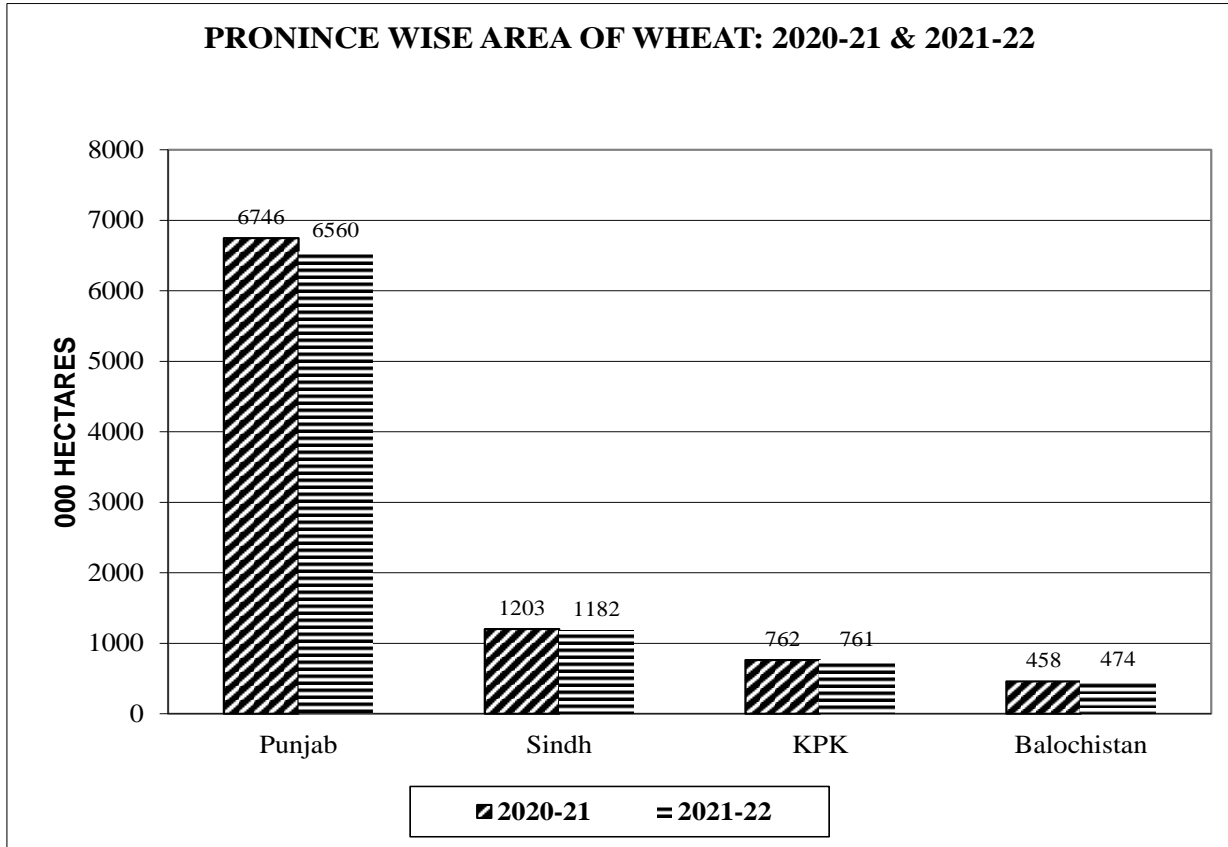


Figure-3

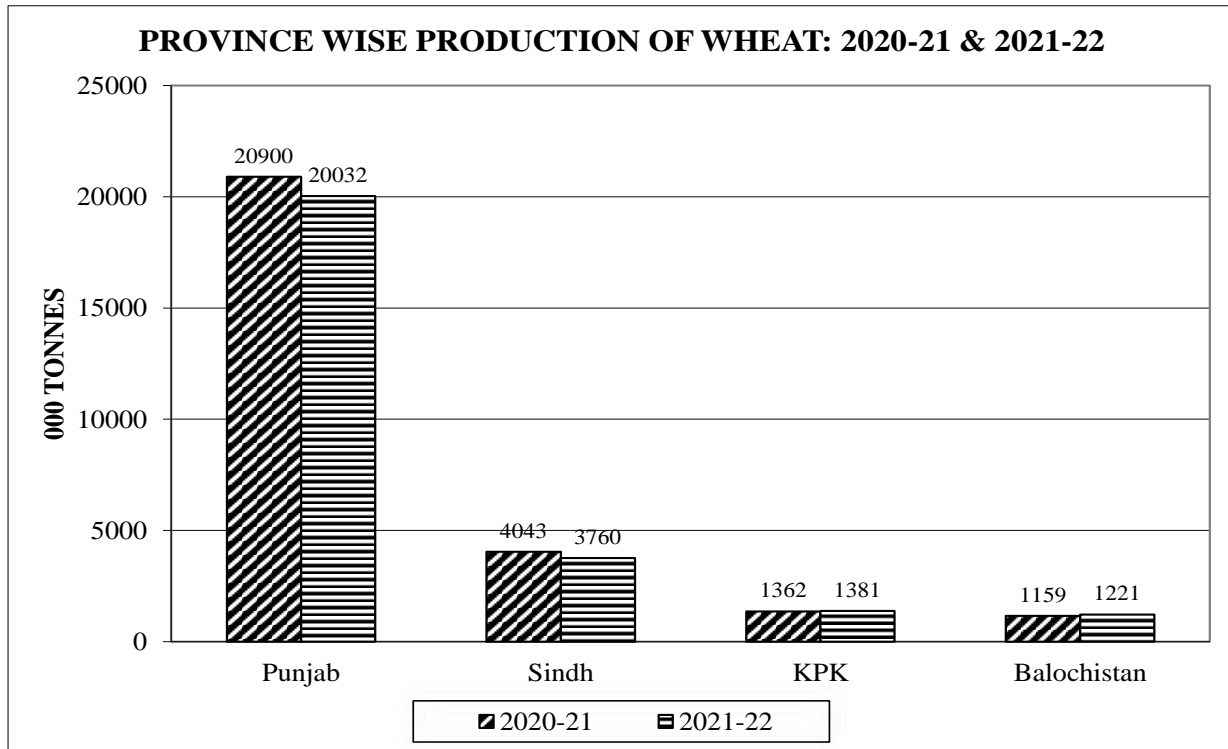


Figure-4

3.6 Targets Vs Achievements: 2021-22 Crop

20. Wheat production target for 2021-22 crop was at 28.885 million tonnes from an area of 8.977 million hectares by the provincial governments. However, the production of wheat is reported at 26.394 million tonnes, dropped by 8.6 per cent against the target. The production target could not be achieved due to legging in of 2.5 and 6.2 per cent in area and yield respectively. Provincial details on area, yield and production may be seen in Table-6 and also depicted in Figures 5 and 6.

Table-6: Targets Vs Achievements in Area, Yield and Production of Wheat: 2021-22 Crop

Country/ Province	Area		Devia- tion from target	Yield per hectare		Devia- tion from target	Production		Devia- tion from target
	Targets	Achieve- ments		Targets	Achieve- ments		Targets	Achieve- ments	
	000 ha		Per cent	Kgs		Per cent	000 tonnes		Per Cent
Pakistan	9,210.04	8,976.50	-2.5	3,136	2,940	-6.2	28,885.00	26,393.70	-8.6
Punjab	6,560.10	6,559.80	0.0	3,345	3,054	-8.7	21,945.00	20,032.00	-8.7
Sindh	1,199.92	1,181.70	-1.5	3,500	3,182	-9.1	4,200.00	3,759.70	-10.5
KPK	900.04	760.90	-15.5	1,694	1,815	7.1	1,525.00	1,381.00	-9.4
Baluchis- tan	549.98	474.10	-13.8	2,209	2,575	16.6	1,215.00	1,221.00	0.5

Sources: 1. For targets: 18th FCA meeting minutes held on 31-03-2022, M/o NFS&R, Islamabad
(b) Average estimates of area & production of last three years for KPK and Baluchistan
2. For Achievements: Annex-I.

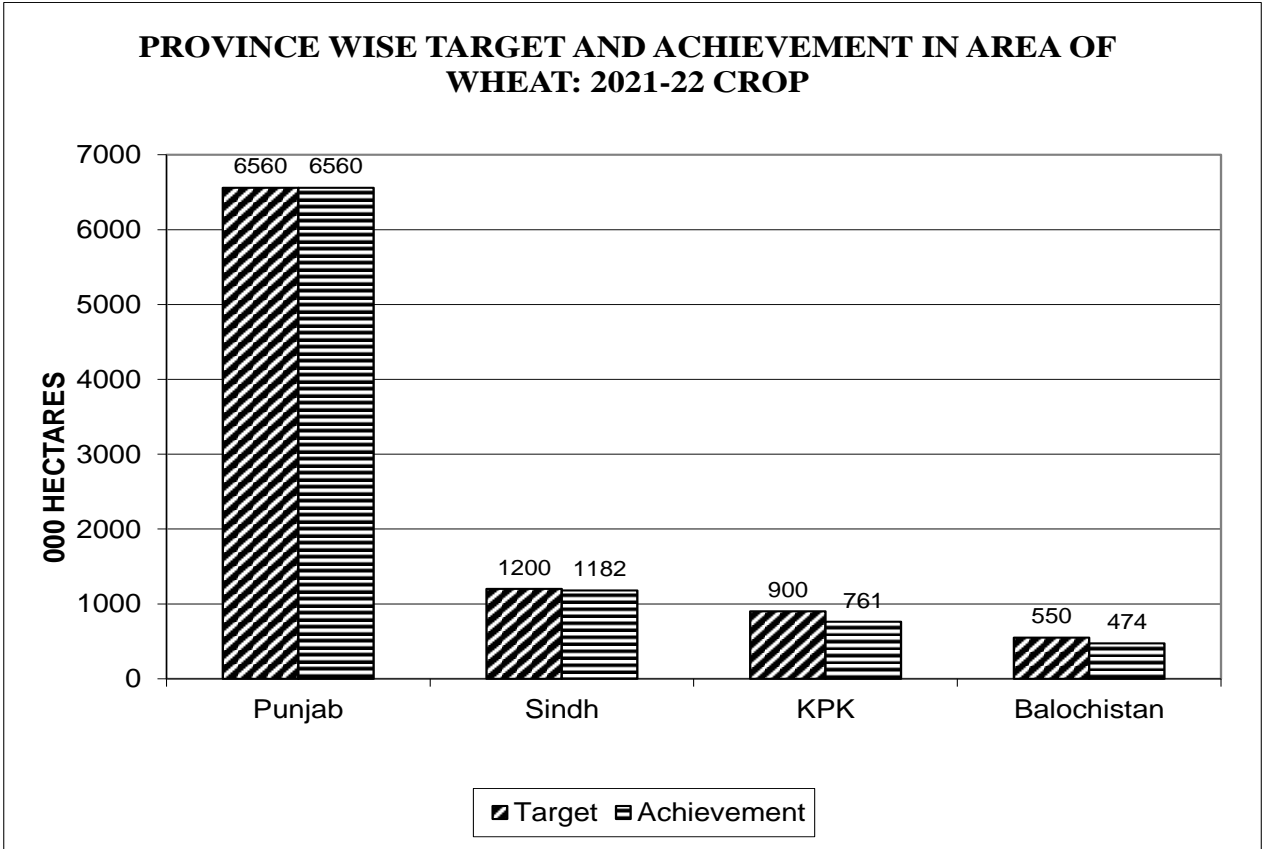


Figure-5

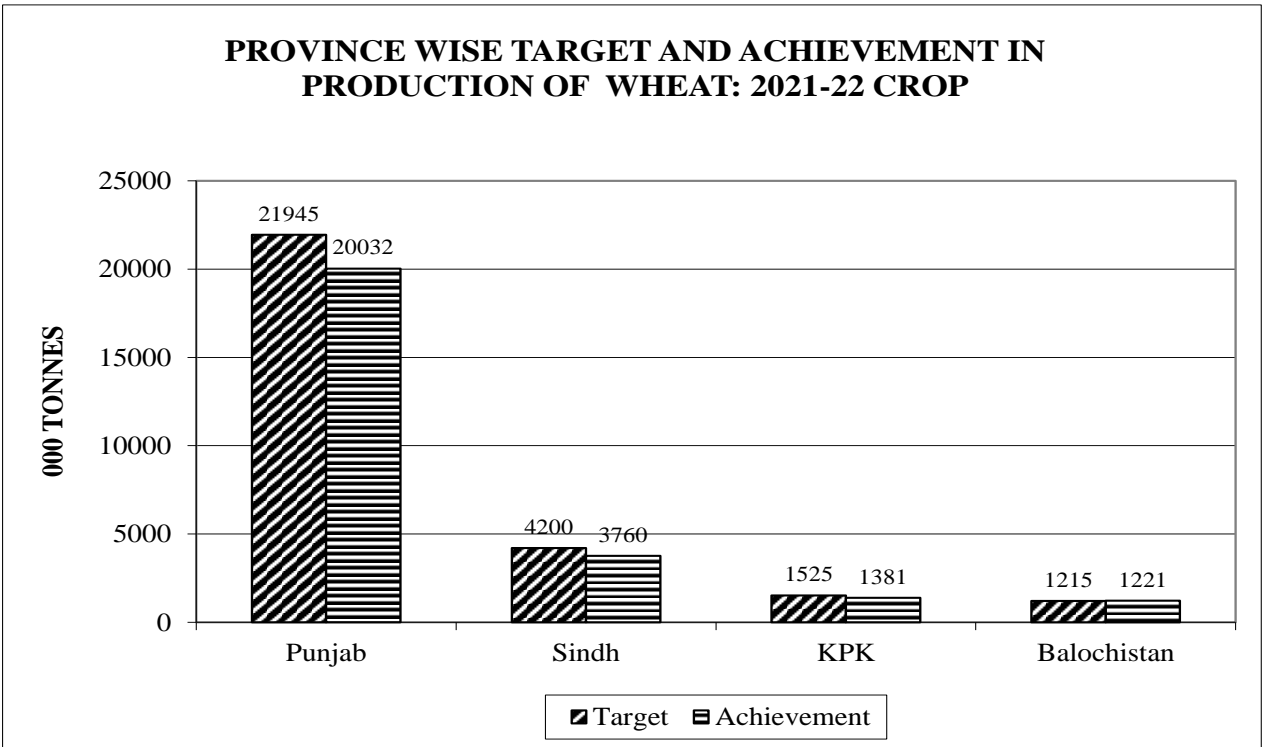


Figure-6

4. FACTORS CONSIDERED FOR PRICE POLICY ANALYSIS

21. Following major factors were considered for the analysis of the price policy of wheat 2022-23 crop:

- 4.1 Domestic Demand, Supply, Stocks and Price Situation
- 4.2 World Production, Consumption, Stocks and Trade Situation
- 4.3 International Price
- 4.4 Export or Import Parity Prices
- 4.5 Cost of Production
- 4.6 Comparative Economics of Competing Crops
- 4.7 Nominal and Real Support and Market Prices
- 4.8 Economic Efficiency of Wheat Production in Pakistan
- 4.9 Producer Prices of Wheat in Selected Countries
- 4.10 Impact of Increase in Support Price / Profitable Price of Wheat on Consumer Price Index (CPI) and Average Household Expenditure

4.1 Domestic Demand, Supply, Stocks and Price Situation

- Domestic Demand, Supply and Stocks

22. During 2021-22, the country has produced 26.39 million tons of wheat. After adding the carryover stocks of 1.81 million tons as on May 1, 2022, total wheat supply in the country for 2022-23 consumption year would be 28.02 million tons. This supply may slightly increase if production of wheat in Azad Kashmir and Gilgit Baltistan estimated at 0.26 million tons¹ is added. Thus total availability of wheat in the country would be 28.46 million tons.

23. The country requirement of wheat has been worked out on three bases: (1) Balance-sheet method. According to this method, last three years' production plus last year carryover stocks plus imports minus export and carry forward stocks are accounted for separately and it is assumed that the remaining quantity has been consumed as food, feed, wastage and seed. On the basis of three years average, it is assumed that it is per capita consumption of the country for current year it works out 114 kgs. (2) M/o National Food Security and Research is using 115 kgs per capita annual consumption. (3) Pakistan Bureau of Statistics has reported in House hold Integrated Economic Survey (HIES) 2018-19 that the national per capita wheat consumption has been reduced to 84 kgs per annum. The calculations are presented in Table -7.

¹ Presuming 1% of the country's total production.

Table-7: Domestic Requirements of Wheat for 2022-23 Wheat Year: (May-April)

S. No.	Item	Based on annual per capita Consumption on the basis of		
		API	M/o NFS&R	HIES
		114 Kgs	115 Kgs	84 kgs
1.	Population (Million)	237.28	237.28	237.28
2.	Human consumption requirement (million tons)	27.05	27.29	19.93
3.	Allowance for seed, feed and wastage @ 10 per cent of total production of 2021-22 crop(million tons)	2.67	2.67	2.67
4.	Food Security reserves (million tons)	1.00	1.00	1.00
5.	Total requirements (million tons)	30.72	30.96	23.60
6.	Total supply (production + carry forwarded) (mil: tons)	28.46	28.46	28.46
7.	Surplus/ Deficit(million tons)	-2.26	-.250	4.86

Source: Annex-IV.

24. API has calculated annual per capita availability of wheat requirement/ consumption for 2022-23 for the population of 237.28 million (including population of AJK area, Gilgit Baltistan and Afghan Refugees) by using above mentioned per capita requirements. According to balance sheet method the consumption requirement is estimated at 27.05 million tons. Accounting for seed, feed and wastage @ 10 per cent of production and strategic reserve of one million, gross domestic requirement for 2022-23 is estimated at 30.72 million tons, thus having a deficit of 2.26 million tons. By using M/o NFS&R consumption level, the total requirement is estimated at 30.96 million tons, resultantly the deficit reached at 2.50 million tons. However, this requirement would be 23.60 million tons if the HIES data of 84 kgs per annum, generating a surplus of 4.86 million tons.

- Post- harvest prices

Punjab

25. Monthly wholesale prices of wheat during the post-harvest months of 2021-22 crop in the major producing area markets of the Punjab is depicted in Table-8.

Table-8: Monthly Average Wholesale Prices of Wheat in Main Producing Area Markets of Punjab during Post-harvest Season of 2021-22 Crop

Markets	April	May	June	Average
	-----Rs per 40 kgs-----			
Lahore	2,120	2,283	2,610	2,338
Faisalabad	2,335	2,322	2,609	2,422
Sargodha	2,250	2,298	2,607	2,385
Multan	2,221	2,264	2,504	2,330
Gujranwala	2,435	2,300	2,380	2,372
Okara	2,224	2,255	2,461	2,313
R. Y. Khan	2,214	2,355	2,635	2,401
Bahawalpur	2,186	2,317	2,637	2,380
D. G. Khan	2,223	2,293	2,605	2,374
Average	2,245	2,298	2,561	2,368

Sources: Directorate of Agriculture (E&M), Lahore, Punjab.

26. The price data of wheat in Table-8 shows that the monthly average wholesale prices of wheat in main producing areas of Punjab were higher than the support price of Rs. 2,200 per 40 Kgs during the post-harvest period 2021-22 except in Lahore and Bahawalpur markets during the month of April 2022, the prices received by the growers reported at the level of Rs. 2,120 and 2,186 respectively. The prices ranged between Rs 2,120/40 kgs in Lahore during April, 2022 and to Rs 2,637/40 kgs in Bahawalpur market during June, 2022. The seasonal average has ranged between Rs 2,245 to Rs 2,561 per 40 kgs.

Sindh

27. In Sindh, the price of wheat ruled higher than support price during the post-harvest season of 2021-22. The prices ranged between Rs. 2,200 in Mirpurkhas market during month of April, 2022 and in Hyderabad market during month of May, 2022 to Rs. 2,900 during month of June, 2022 in Hyderabad and Nawabshah markets. The seasonal average ranged between Rs. 2,433 per 40 kgs to Rs. 2,567 per 40 kgs.

Table-9: Monthly Average Wholesale Prices of Wheat in Main Producing Area Markets of Sindh during Post-harvest Season of 2021-22 Crop

Markets	April	May	June	Average
	-----Rs per 40 kgs-----			
Mirpur Khas	2,200	2,250	2,850	2,433
Hyderabad	2,500	2,200	2,900	2,533
Nawabshah	2,250	2,300	2,900	2,483
Sukkur	2,450	2,500	2,750	2,567
Average	2,350	2,312.5	2,850	2,504

Source: Reported by the concerned Market Committees.

4.2 World Production, Consumption, Stocks and Trade Situation

28. The data on world production, consumption, stocks and trade situation from 2020-21 to 2022-23 are presented in Table-10.

Table-10: World Wheat Situation: 2020-21 to 2022-23

Items	2020-21	2021-22 (Estimated)	2022-23 (Forecast)
Million tonnes.....		
Opening stocks	276	279	282
Production	774	781	770
Total Supply	1,050	1,060	1,052
Consumption	771	777	780
Closing stocks	279	282	272
Trade	190	196	194

Source: Grain Market Report, International Grains Council, London, 21- 7- 2022

29. The world wheat production in 2021-22 is estimated at 781 million tons, 7 million tons or 0.90 per cent higher than that last year production of 774 million tons. Adding the opening stocks of 279 million tons, the world supply of wheat during 2021-22 is estimated at 1,060 million tons 10 million tons higher than the last year, mainly due to significant increase in production and a slight increase in opening stocks during 2021-22. By virtue of increased production and opening stocks the carryover stocks during 2021-22 have increased by 3 million metric tons.

30. International Grains Council London reported that the global wheat production in 2022-23 is forecast to decrease significantly to 770 million tons, 11 million tons or 1.41 per cent lower than last year. Accounting for the opening stocks of 282 million tons, total supply would be at 1,052 million tones against the consumption forecast of 780 million tons in 2022-23. The carryover stocks during 2022-23 are forecast to decrease to 272 due to less production although opening stocks were higher as compared to the last year.

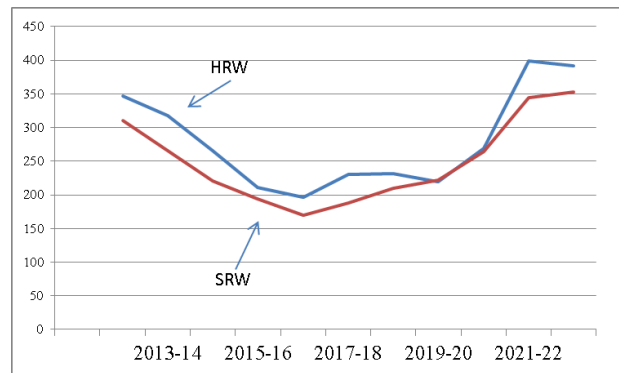
31. In the case of the above mentioned forecast proving accurate estimates and the war between Russia and Ukraine persisted, the price of wheat in international market could become unstable.

4.3 International Prices of Wheat

32. The US No 2 Hard Red Winter (HRW) wheat is considered very identical in characteristics of wheat being produced in Pakistan. The Agriculture Policy Institute has been using the HRW data for the price policy analysis. However, the data of US No 2 Soft Red Winter (SRW) is also being used for the analysis.

33. Average Fob (Gulf) prices of US Hard Red Winter from 2012-13 to 2022-23 (Jul, 22) are presented in Annex-V. The prices of US Hard Red Winter showed a volatile pattern during the period under review.

Fig 7: International Prices of Wheat (USD/Ton)



34. The prices were averaged at US \$ 347 per ton during 2012-13 which showed a decreasing trend in next four years and averaged at US \$ 197 per tons in 2016-17, the lowest level of price during the period under review. The prices started to increase in next couple of years except a slight decline in 2019-20, reached at US \$ 399 per ton, the highest level of price during the period under review. In current season 2022-23 (July, 22), the price is showing slightly decreasing trend and averaged at US\$ 392 per ton.

35. The price of Soft Red Winter has followed an almost similar pattern as of HRW during the period under review.

4.4 Import and Export Parity Prices

36. The import and export parity prices have been calculated on the basis of fob (Gulf) prices of US No 2 HRW and SRW wheat. The results of the calculations have been summarized in Table-11 and 12, while the detail of these calculations may be seen at Annexes VI, VII and VII-B.

Table -11 Import Parity Price of Wheat on the Basis of US No 2 HRW and SRW fob (Gulf) Price, Future Prices of Black Sea and Actual imports by TCP

S. No	Item	2022-23 Jul-Sept	During 2021-22	During 2019-20 to 2021-22
I	Fob Gulf price of HRW (US \$ per ton)	392	399	296
	Import parity price per 40 kgs of wheat:			
	i) if consumed at Multan	4,746	4,812	3,837
	ii) If consumed at Karachi	4,347	4,413	3,438
II	Fob Gulf price of SRW (US \$ per ton)	353	344	277
	Import parity price per 40 kgs of wheat:			
	i) if consumed at Multan	4,377	4,292	3,657
	ii) If consumed at Karachi	3,978	3,892	3,258
III		Oct, 22	Nov, 22	Dec,22
	Future Prices of Black Sea (US \$ per ton)	324	327	330
	Import parity price per 40 kgs of wheat:			
	iii) if consumed at Multan	4,036	4,064	4,417
	iv) If consumed at Karachi	3,637	3,665	3,694
IV	Import Parity of Actual Imports by TCP *	407.49		
	Import parity price per 40 kgs of wheat:			
	i) if consumed at Multan		4,315	
	ii) if consumed at Karachi		3,919	

* 25-07-2022 (4th internal tender for import of 200,000 MT by TCP, Ministry of Commerce)

Source: For S. No. I & II : Annex-VI
 For S. No. III : Annex-VII
 For S. No. IV : Annex-VII-B

Table-12: Export Parity Prices of Wheat on the Basis of No.2 HRW and SRW fob (Gulf) Price

Item	2022-23 Jul-Sept)	During 2021-22	During 2019-20 to 2021-22
Fob Gulf price of HRW assuming for FOB (Karachi) price (US \$ per tonne)	392	399	296
Export parity price per 40 kgs at procurement center	3,116	3,178	2,267
Fob Gulf price of SRW assuming for FOB (Karachi) price (US \$ per tonne)	353	334	277
Export parity price per 40 kgs at procurement center	2,771	2,692	2,100

Source: Annex-VIII

4.5 Cost of Production of Wheat

37. In formulating price proposals for the farm produce, the cost of production (COP) is one of the crucial considerations. However, the empirical estimation of a typical COP involves a number of conceptual and practical difficulties. These difficulties in general arise from the larger number of growers with diverse farming systems involving substantial variations in the agro-climatic conditions, cropping pattern, use level of inputs, adoption of farm technologies, cultural practices etc, resulting in varying crop yields and unit cost of production.

4.5.1 Prime Minister's Task Force on Agriculture

38. The Prime Minister of Pakistan constituted a Task Force on Agriculture, led by the Federal Minister, NFS&R and consisted of Federal Ministers for Water Resources, Industries & Production, other members of National Assembly, Provincial Secretaries of Agriculture, VCs of Agriculture Universities, Federal Secretaries of NFS&R, Industries and Production, SAPM, progressive farmers and technical departments of NFS&R. The Task Force, after detailed deliberations, worked out the cost of production estimates for two categories of growers: Average and Resourceful. Based on the current situation and the prospective crop yield levels, the Task Force recommended enhanced level of investment, in the form of increased amount of inputs and improved cultural/farm management practices, which will help achieve average productivity level of 40 maunds (40 Kgs) per acre. With these projected estimates of cost of production, the Government would be requested to announce a profitable support price first of its kind, that will help Resourceful farmer to get higher production, improve his/her returns from the farm as well as help achieve food self-sufficiency target at country level. The costs of production estimates worked out by the Task Force are summarized in Table 13 and 14 and detail is at Annex- XI and XII.

Table: 13 Summary Cost of Production Estimates 2022-23 (Average Farmer)
(PM Task Force on Agriculture)

Inputs/Activity/Operation	2022-23 Crop	
	Cost	Share
	Rs/Acre	%
Land preparation	6,900	9.25
Seed and sowing operations	5,475	7.34
Plant protection & interculture	2,000	2.68
Irrigation & labour	8,700	11.66
Fertilizers, FYM & application	21,502	28.83
Harvesting & threshing	10,450	14.01
Land rent	22,500	30.17
Other costs (mark-up, land tax, and management)	5,858	7.85
Value of wheat bhoosa	(9,150.0)	(12.27)
Net cultivation cost	74,584	100.00
Yield (40kgs/acre)		30.50
Cost of production at market/procurement centre (Rs/40kg)		2,495.39

Source: Annex- XI

Table: 14 Summary Cost of Production Estimates 2022-23 (Resourceful Farmer)
(PM Task Force on Agriculture)

Inputs/activity/Operation	2022-23 crop	
	Cost	Share
	Rs/acre	%
Land preparation	9,400.00	9.89
Seed and sowing operations	8,000.00	8.41
Plant Protection and interculture	4,000.00	4.21
Irrigation and labour	9,450.00	9.94
Fertilizers, FYM & application	32,535.00	34.22
Harvesting & threshing	5,000.00	5.26
Land rent	25,000.00	26.29
Other costs (mark-up, land tax, management)	7,703.50	8.10
Value of wheat bhoosa	(6,000.00)	(6.31)
Net cultivation cost	95,088.50	100.00
Yield (40kg/acre)		40.00
Cost of production at market/ procurement centre (Rs/40kg)		2,427.21

Source: Annex- XII

4.5.2 Cost of Production Estimates by API

39. The cost of production of wheat for 2022-23 crop in the Punjab and Sindh have been estimated by adopting the input-output parameters used in the 2021-22 Wheat Policy Analysis Report along with the latest inputs prices and custom hire rates of cultural operations, collected through field survey conducted by the API during August 2022 in the major wheat growing areas of the Punjab and Sindh. The inputs prices and custom hire rates were also supplemented with the information provided by the representatives of the Provincial Governments and Farmers' Associations in the meeting of the API Committee on wheat, held on 16th August 2022 at NFS&R, Islamabad. Details of the COP estimates for the Punjab and Sindh for 2021-22 and 2022-23 crops are presented at Annex-IX and X, respectively while a summary is presented in Table-15.

4.5.3 Average Farmers' Cost of Production of Wheat: 2021-22 and 2022-23 Crops

40. Based on the field survey carried out by API, the cost of production estimates of wheat in the Punjab and Sindh for 2021-22 and 2022-23 crops are summarized and presented in Table-15:

Table-15: Average Farmers' Cost of Production of Wheat: 2021-22 and 2022-23 Crops

Items	Units	2021-22 Crop	2022-23 crop	Increase/decrease in 2022-23 over 2021-22
Punjab				
1. Net Cost of cultivation	Rs/acre	49,110.97	66,404.43	17,293.46
2. Yield				
a) Yield in kgs	Kgs/acre	1,200.00	1,220.00	20.00
b) Yield in maunds	40 kgs/acre	30.00	30.50	0.50
3. Cost of production at farm level	Rs/40 kgs	1,637.03	2,177.19	540.16
4. Marketing cost	Rs/40 kgs	40.00	45.00	5.00
5. Cost of production at market/ procurement centre				
a) With land rent	Rs/40 kgs	1,677.03	2,222.19	545.16
b) Without land rent	Rs/40 kgs	1,010.39	1,484.49	474.10
Sindh				
1. Net Cost of cultivation	Rs/acre	52,908.24	67,826.98	14,918.74
2. Yield				
a) Yield in kgs	Kgs/acre	1,300.00	1,320.00	20.00
b) Yield in maunds	40 kgs/acre	32.50	33.00	0.50
3. Cost of production at farm level	Rs/40 kgs	1,627.95	2,055.36	427.42
4. Marketing cost	Rs/40 kgs	45.00	50.00	5.00
5. Cost of production at market/ procurement centre				
a) With land rent	Rs/40 kgs	1,672.95	2,105.36	432.42
b) Without land rent	Rs/40 kgs	1,057.56	1,423.54	365.98

Source: Annex-IX-X

Punjab

41. The expected cost of cultivation of one acre of wheat in the Punjab during 2022-23 crop year is likely Rs. 66,404.43 including land rent (Table16). The cost of producing wheat at farm gate is worked out at Rs 2,177.19 per 40 kgs, provided that average yield is 1,220 kgs per acre. Accounting for the marketing charges @ Rs 45 per 40 kgs, the market/procurement center level cost of production comes out to Rs 2,222.19, high by Rs 545.16 (32.5 %) than the corresponding cost of Rs 1,677.03 in 2021-22.

Sindh

42. Cost of sowing one acre of wheat in Sindh during 2022-23 crop is likely to be Rs 67,826.98, inclusive of land rent. Distributing this cost over the average yield of 1,320 kgs per acre, the farm level cost of production comes to Rs 2,055.36 per 40 kgs. Adding marketing cost @ Rs 55 per 40 kgs, the cost of producing and delivering 40 kgs wheat at market/procurement center level would be Rs 2,105.36, reflecting an increase of Rs 432.42 (25.8 %) over the last year's corresponding cost of production.

43. The increases in the cost of production of wheat for the 2022-23 crop in the Punjab and Sindh over the last year's cost are mainly attributed to the increased hiring rates of fertilizers, harvesting & threshing, plant protection, interculture and ploughing. Moreover, the escalation in other inputs has also added substantially to the increase in cost of production of wheat for 2022-23 crop.

4.5.4 Cost of major farm inputs and operations

44. The cost of major operations and farm inputs in the total cost of cultivation of wheat in the Punjab and Sindh during 2021-22 and 2022-23 crops along with percent changes therein are presented in Table-16.

Punjab

45. The Land rent, Fertilizers, Harvesting and Threshing, Seed and Sowing are the major components in the net cost of cultivation of wheat in the Punjab during 2022-23 crop year, accounting, respectively 34%, 29%, 16% and 9 %. Other variables also have share changes like, Land preparation 9% , Irrigation and other cost 8%. Certain components have shown relatively higher changes like fertilizers, plant protection, harvesting and threshing, land preparation etc.

Sindh

46. Similarly, in Sindh too land rent, fertilizers, harvesting and threshing would be major constituents of the net cost of cultivation during 2022-23 crop season, accounting for 33%, 29% and 15% respectively. An identical situation as in Punjab is visible, in terms of changes in certain cost of components over the previous year, fertilizer and plant protection depicting relatively higher changes.

Table-16: Cost of Major Farm Operations/Inputs of Wheat: 2021-22 and 2022-23 Crops

Operations/inputs	2021-22 crop		2022-23 crop		Increase/ Decrease over last year %
	Rs/acre	Share	Rs/acre	Share	
Punjab					
1. Land preparation:	4,600.00	9.37	5,900.00	8.88	28.26
2. Seed and sowing operations:	6,050.00	12.32	5,975.00	9.00	(1.24)
3. Plant Protection & Interculture	1,350.00	2.75	2,000.00	3.01	48.15
4. Irrigation & WCC	4,062.50	8.27	4,050.00	6.10	(0.31)
5. Fertilizers, FYM & Tpt/Application	12,593.14	25.64	19,064.49	28.71	51.39
6. Harvesting & threshing	8,550.00	17.41	10,450.00	15.74	22.22
7. Land rent	20,000.00	40.72	22,500.00	33.88	12.50
8. Other costs (Mark-up, L.Tax)	2,985.34	6.08	5,264.95	7.93	76.36
9. Value of wheat bhoosa	(8,980.00)	(18.29)	(9,150.00)	(13.78)	1.89
10. Net cultivation cost	49,110.97	100.00	66,404.43	100.00	35.21
Sindh					
1. Land preparation:	6,350.00	12.00	7,100.00	10.47	11.81
2. Seed and sowing operations:	6,720.00	12.70	6,780.00	10.00	0.89
3. Plant Protection & Interculture	1,300.00	2.46	1,600.00	2.36	23.08
4. Irrigation & WCC	4,083.90	7.72	4,400.00	6.49	7.74
5. Fertilizers, FYM & Tpt/Application	12,855.00	24.30	19,381.80	28.58	50.77
6. Harvesting & threshing	9,500.00	17.96	10,450.00	15.41	10.00
7. Land rent	20,000.00	37.80	22,500.00	33.17	12.50
8. Other costs (Mark-up, L.Tax)	3,199.34	6.05	5,515.18	8.13	72.39
9. Value of wheat bhoosa	(9,000.00)	(17.01)	(9,900.00)	(14.60)	10.00
10. Net cultivation cost	52,908.24	100.00	67,826.98	100.00	28.20

Notes:

1. Rounding of figures may result in slight deviation;
2. Others include mark-up, management charges, land tax and drainage cess;
3. Figures in parenthesis are percent shares in total cost of cultivation.

Source: Annex-IX & X.

4.6 Comparative Economics of Wheat and Competing Crops

47. Farmers allocate farm resources among the various competing farm enterprises keeping in view certain economic indicators more specifically output-input ratio, gross cost, gross income, gross margin, net income, returns to purchased inputs, revenue per acre-inch of irrigation water and revenue per day of crop duration, etc. These indicators provide useful insights about the options farmers consider before deciding on allocation of land and other resources. Largely, the farm management data and output-input prices help in constructing the indicators, which change over time and space, necessitating due care in the empirical estimation.

48. Wheat is grown under both the irrigated and rain-fed conditions throughout the country. Around 87 percent of the production at the country level, however, comes from the irrigated regions where it competes with oilseed crops like canola and spring sunflower. It also faces indirect competition from sugarcane, an annual crop competing against both ‘rabi’ and ‘kharif’ crops. In such a situation, wheat combination with ‘kharif’ crops would need to be considered. The likely combinations in this context could be basmati + wheat, IRRI + wheat, cotton + wheat, cotton + sunflower and IRRI + sunflower.

49. The economics of wheat and competing crops has been analyzed in terms of output and input prices received and paid by the growers during 2021-22 at farm level.

4.6.1 Performance of Wheat – Punjab

50. A summary of the analysis of various economic indicators reviewed particularly the output-input ratio and revenue per rupee of purchased inputs cost, day of crop duration and unit of irrigation water for the Punjab is given in the following lines.

Table-17: Economics of Wheat and Competing Crops at Prices Realized by the Growers in the Punjab: 2021-22Crops

Province / crops /crop combination	Output-input ratio	Revenue per:		
		Rupee of purchased inputs cost	Crop day	Acre-inch of water used
	Rupees.....		
Wheat	1.27	3.8	500	6,256
Sunflower (spring)	2.01	5.1	1,045	5,702
Canola	2.08	8.1	560	7,760
Seed Cotton + wheat	1.35	3.9	539	5,711
Seed Cotton+ sunflower	1.67	4.4	627	5,559
Basmati Paddy + wheat	1.17	2.6	456	2,150
IRRI Paddy + wheat	1.17	2.9	469	2,091
Sugarcane	1.25	3.5	421	3,458

Source: Annex-XIV

51. Wheat crop has shown relatively lower performance during 2021-22 and farmers received a small margin over the cost of wheat production (27 %). In Punjab, Wheat has performed low against the sunflower in terms of Output-input ratio, however, better in terms of returns to irrigation water after Canola crop. Canola gave better rewards over wheat and sunflower in terms of returns to overall investment, purchased inputs and irrigation water.

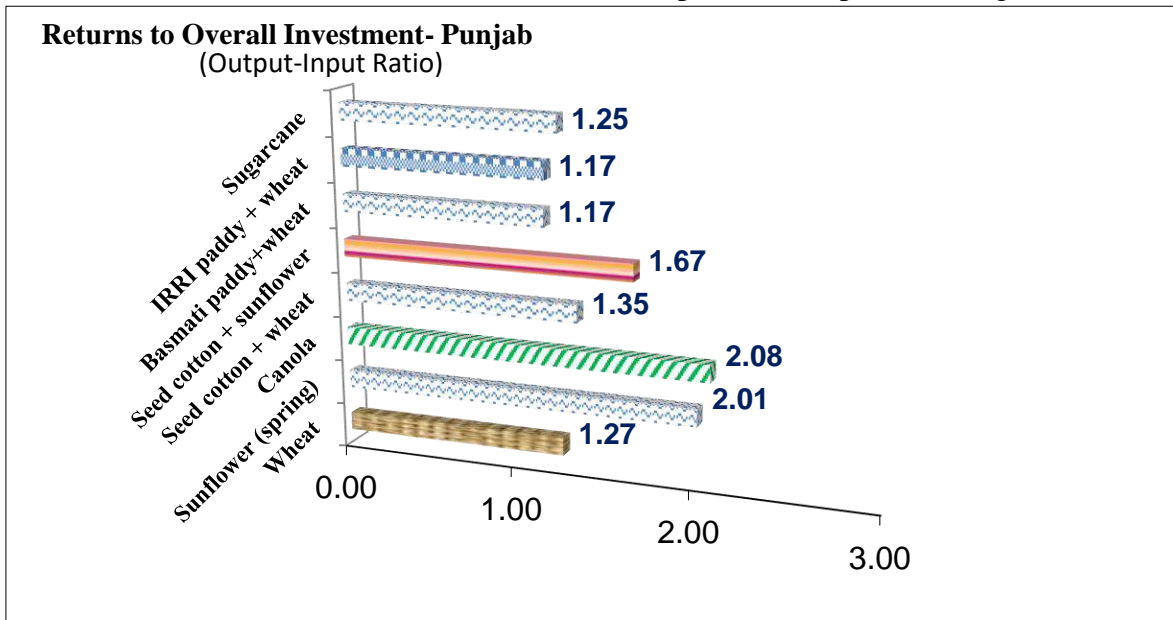


Fig - 8: Returns to Overall Investment in Punjab

52. Sunflower crop has out-competed wheat in terms of all the criteria except irrigation water. While Canola has out-competed sunflower crop in all the economic criteria, except crop duration with a considerable margin.

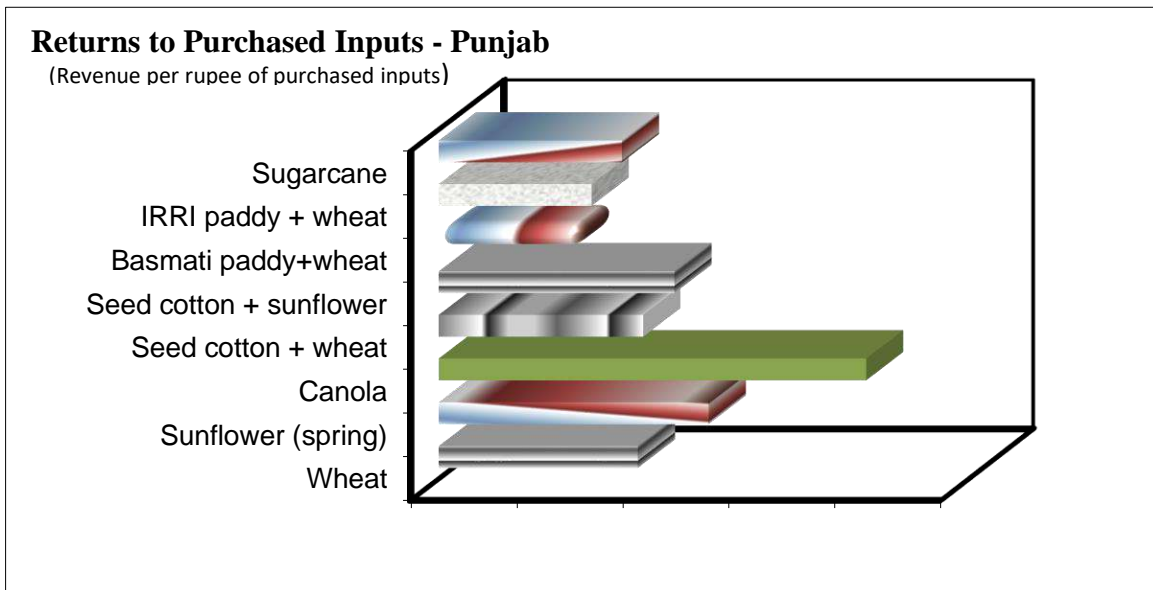


Fig - 9: Returns to Purchase Input – Punjab

53. Under the indirect competition scenario, wheat combinations with Rice varieties performed lower against sugarcane and cotton combinations in terms of all the economic criteria adopted in this analysis. The sugarcane, on the other hand, did well as compared to crop combinations of wheat and rice in terms of entire economic criteria except crop duration. However, Sugarcane lagged behind cotton combinations in all the economic criteria, considerably.

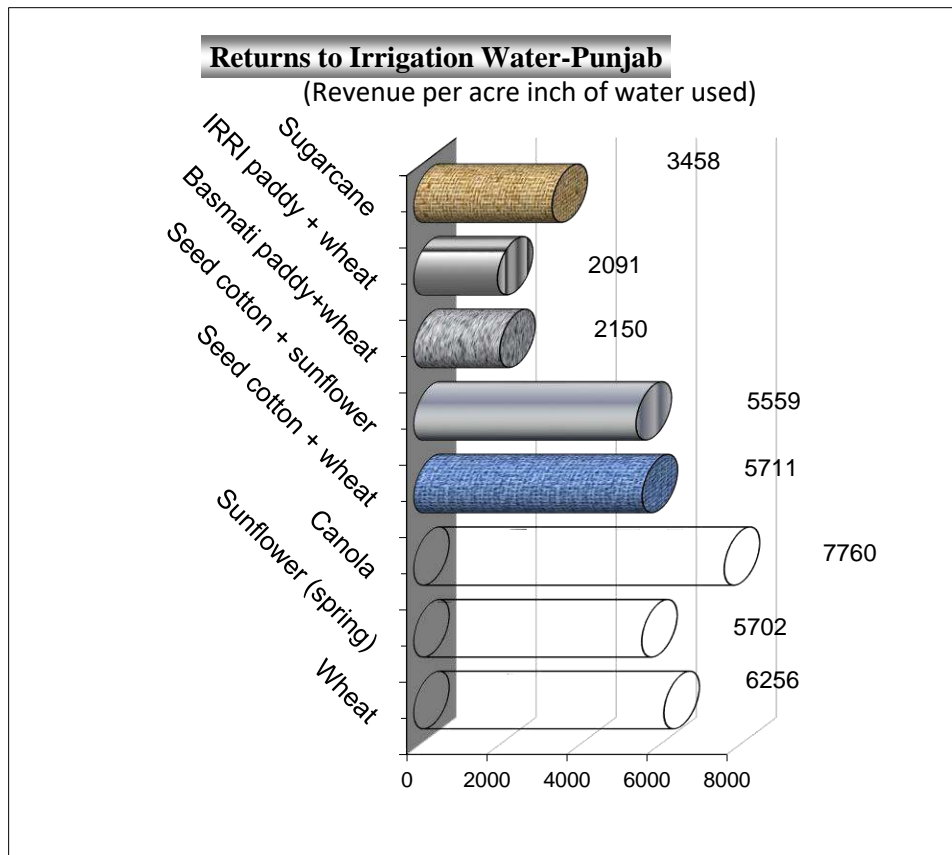


Fig-10: Returns to Irrigation Water (Punjab)

4.6.2 Performance of Wheat - Sindh

55. Economics of wheat and competing crops has been analyzed at prices realized by the growers in Sindh for crop season 2021-22 against various economic indicators including the output-input ratio and revenue per rupee of purchased inputs cost, day of crop duration and acre-inch of irrigation water. The findings of the analysis are presented below:

56. In Sindh, the returns from wheat crop remained relatively higher than 'rabi' oilseed crop Sunflower in the entire criteria analyzed during 2021-22. However, Canola performed much better than both wheat and sunflower in terms of output-input ratio and purchased inputs but lagged behind in crop duration and also against wheat in terms of irrigation water.

54. Wheat's position viz a viz oilseed crops, both under the direct and indirect competition, is much lower in large part of the economic criteria analyzed. The major factor is the better prices received by the oilseeds during 2021-22 crop season.

Table-18: Economics of Wheat and Competing Crops at Prices realized by the Growers in Sindh: 2021-22 Crops

Province / crops / crop combination	Output-input ratio	Revenue per:		
		Rupee of purchased inputs cost	Crop day	Acre-inch of water used
	Rupees.....		
Wheat	1.28	3.8	541	6,765
Sunflower (spring)	1.22	3.3	507	2,763
Canola	1.53	6.1	401	5,559
Seed Cotton + wheat	1.37	4.1	580	6,958
Seed Cotton + sunflower	1.36	3.9	483	4,709
IRRI Paddy + wheat	1.26	3.6	460	2,433
IRRI Paddy + Sunflower	1.23	3.4	403	1,859
Sugarcane	1.27	3.7	333	2,286

Source: Annex-XV.

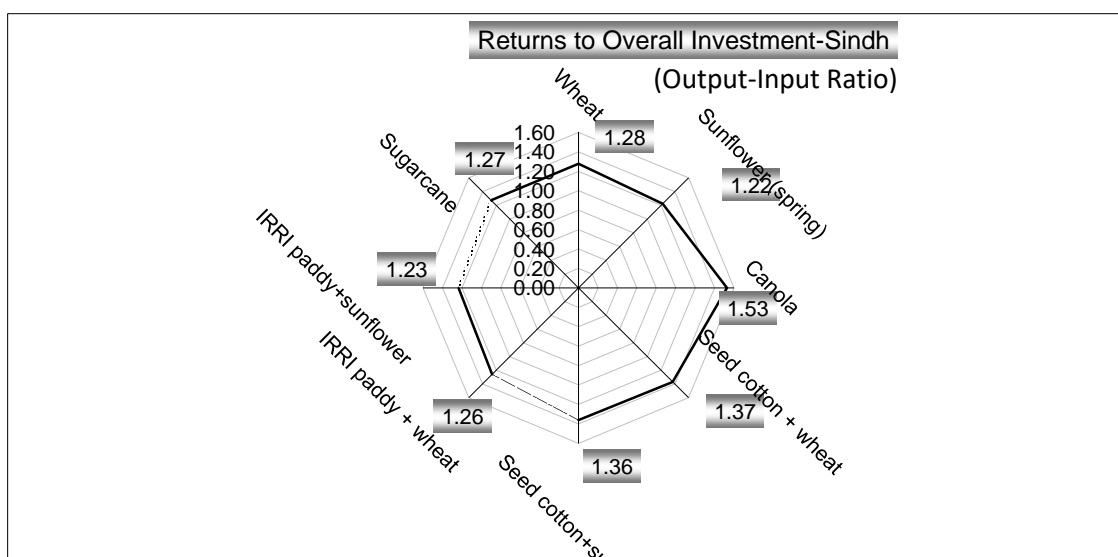


Fig - 11: Returns to Overall Investment in Sindh

57. The above results indicate that in case of direct competition, wheat has an increasing competition to gain its position amongst the competing crops like oilseeds, thus a demand for improvement in its productivity and to remain a rewarding crop.

58. In case of indirect competition, a mixed situation is being observed across the crop combinations, certain crops performed better in various indicators but remaining behind in others.

59. Wheat combination with cotton out-performed sugarcane in terms of returns to overall investment, purchased inputs cost, crop duration and irrigation water used. Wheat Rice combination also performed better than sugarcane in terms of crop duration and irrigation water,

while remaining neck-to-neck competition in output-input ratio and purchased inputs cost. Rice-Sunflower, however, failed to perform comprehensively, except crop duration. Wheat along with others outperformed the combination of cotton + sunflower comprehensively. A similar picture is depicted amongst the rice combination where wheat has out competed sunflower in all indicators.

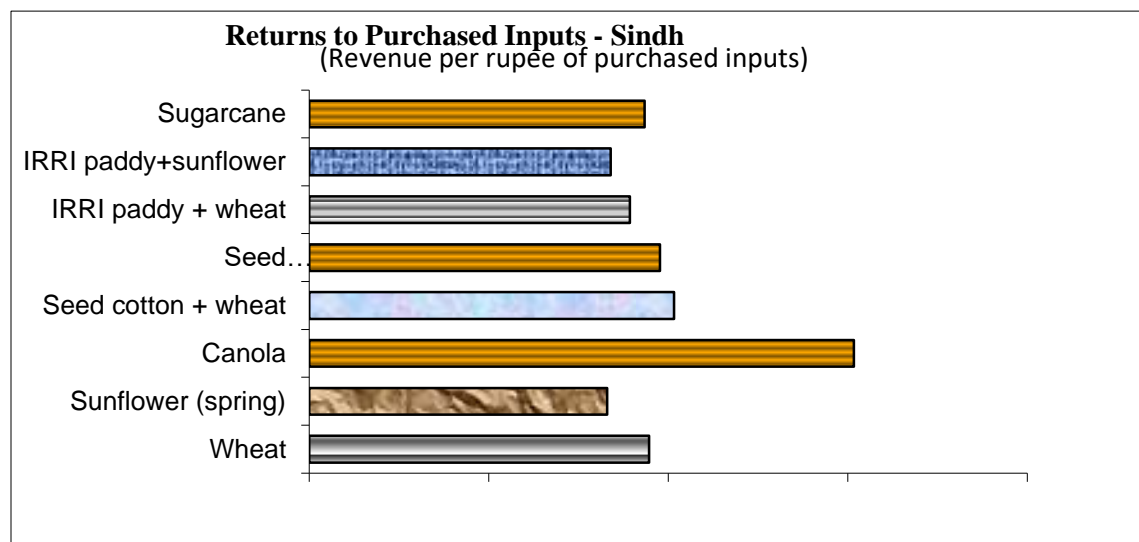


Fig - 12: Returns to Purchased Inputs – Sindh

60. In summary, wheat's performance against competing crops is presenting a mixed scenario, particularly gaining edge over oil-seed crops in terms of certain criteria. Similarly, wheat combinations with cotton and rice also performed better than sugarcane in terms of various economic indicators analyzed. However, oilseeds have also performed better particularly in Punjab, mainly for better prices fetched during 2021-22 crop season.

61. This situation indicates that growers are getting good price for their produce. Although wheat support price was enhanced considerably by the Government (Rs. 2,200/40 kgs) however, an increased price of oilseeds was also reported which helped them performing better in some of the factors. Government's emphasis on crop diversification, besides ensuring food security in the country and to shift gradually to other high value crops including oilseed is appropriate to ensure improved economic conditions of the farming community, without compromising on food security crop.

4.7 Nominal and Real Prices of Wheat

62. The purchasing power of a certain commodity is influenced by the fluctuations in its price in relation to general price level in the economy. Such variations in the price also affect the welfare and real income of its producers. To ascertain overtime changes in the purchasing power of wheat, the nominal support and market prices of the crop during 2015-16 to 2021-22 have been deflated by the corresponding Consumer Price Index (CPI), the most common measure of inflation in the economy.

4.7.1 Support Prices of Wheat

63. The analysis in terms of nominal and real support prices for the period 2015-16 to 2021-22 is presented in the Table-19.

64. The nominal support price of wheat was Rs. 1,300 per 40 kgs in 2015-16. A stagnant price of wheat in nominal terms i.e. Rs1,300 was maintained for the period of next three years. Afterward, the nominal support price was increased at Rs. 1,400 and Rs. 1,800 per 40 kgs which was further increased in 2021-22 at Rs 2,200 per 40 kgs. Higher trend in CPI pushed back the real worth of crop which is illustrated by the declining trend in the real price in a row (Fig-13). The support price increased 22 per cent gave the farmer price of commodity worth 11.6% higher in real terms over the last year.

Table-19: Nominal and Real Support Prices of Wheat in Punjab: 2015-16 to 2021-22

Year	Consumer Price Index (CPI)	Support Prices	
		Nominal	Real
	2015-16=100	Rs/40 Kgs	
1	2	3	4=(3/2)x100
2015-16	100.00	1,300	1,300.0
2016-17	104.81	1,300	1,240.3
2017-18	110.18	1,300	1,179.9
2018-19	117.99	1,300	1,101.8
2019-20	129.99	1,400	1,077.0
2020-21	140.58	1,800	1,280.4
2021-22	154.02	2,200	1,428.4

Source: Pakistan Economic Survey: 2021-22

65. It is illustrated in Fig-13 that real worth of the wheat crop is on continuous decline during 2015-16 to 2019-20. The issue of this deterioration in real purchasing power of wheat needs to be addressed although a proportional increase in nominal price of wheat mainly to ensure the farmer a remunerative return for the important in short term and to help achieve the food security in long term.

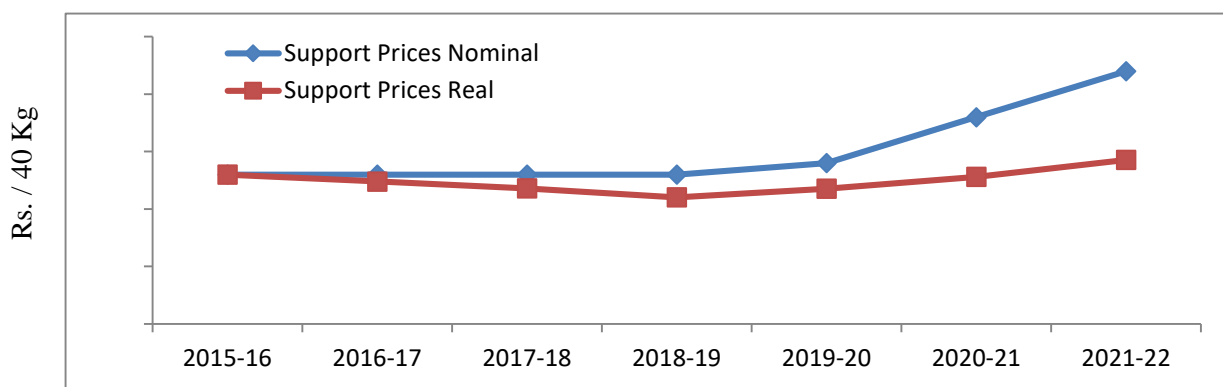


Fig-13: Nominal and Real Support Price of Wheat.

4.7.2 Market Prices of Wheat

66. The analysis in terms of real and nominal average market prices for the period 2015-16 to 2021-22 is set out in Table-20.

Table-20: Nominal and Real Market Prices of Wheat in Sindh: 2015-16 to 2021-22

Crop year	Consumer Price Index (CPI)	Market Prices	
		Nominal	Real
	2015-16=100	Rs/ per 40 Kgs	
1	2	3	4=(3/2)x100
2015-16	100.00	1,206	1,206.00
2016-17	104.81	1,180	1,125.85
2017-18	110.18	1,190	1,080.05
2018-19	117.99	1,220	1,033.99
2019-20	129.99	1,468	1,129.32
2020-21	140.58	1,950	1,387.11
2021-22	154.02	2,504	1,625.76

- Sources:** i) For CPI, Economic Survey of Pakistan: 2021-22. CPI has been worked out to 12 months on the basis of last year.
 ii) For Market prices, Directorates of Agriculture, Government of the Punjab and Sindh (Average of major producing markets) (weighted average).

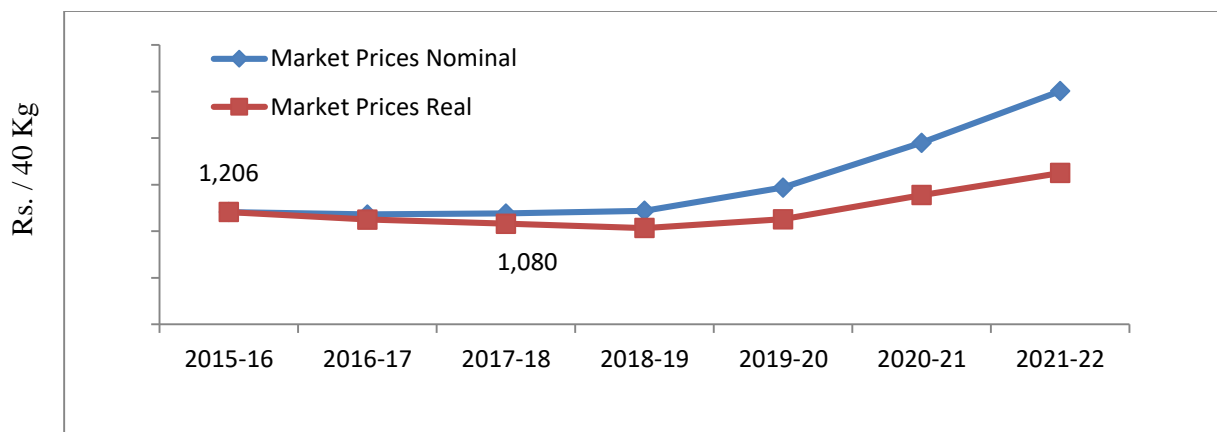


Fig.14: Nominal and Real Market Prices of Wheat

67. Market prices of wheat have evidenced a consecutive change during the entire period under review. These prices remained lower than the support price throughout the period except last three years. Also, the nominal market price remained lower than base year during 2016-18, which took an upward trend afterwards. In 2021-22, the real value of wheat of increased at Rs. 1,712.12 per 40 kgs. The average nominal market price of wheat has evidenced 119% increase against the base year during the period under review. On the other hand, the real value has increased by 41.96% mainly for the rise in CPI by 54.02% during this period.

68. The real market value of wheat remained below the nominal value during the entire period under study. As depicted in Fig-14, the absolute gap between both the prices widened with increasing rate as the years passed over. This widening gap between the two prices indicates that farmers are on the losing end of the game with context to the real purchasing power of the most valued food security commodity of the economy.

69. In order for the growers to stay in the business, a proportionate increase in the price of wheat is necessary, enabling the growers to struggle against the high tide of inflation.

4.8 Economic Efficiency in Wheat Production

70. In Pakistan wheat is important from both farmer as well as consumer point of view. A vast majority of farmers cultivate wheat and the crop occupies maximum of the cropped area of the country.

71. Considerable economic resources are employed in wheat cultivation. Some of these are purchased with cash and are called traded inputs while others are called non-traded inputs because these are not purchased with cash. Traded inputs include seed, fertilizer, machinery, hired labour, tube well water etc while non-traded inputs comprise family labour, management charges, land rent and interest on capital. Economic efficiency of the referred resources used for

producing wheat is normally assessed through three indicators. These are Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC) and Domestic Resource Cost Coefficient (DRC). Their definitions and estimates are described in detail in the following paragraphs.

4.8.1 Nominal Protection Coefficient (NPC)

72. NPC is the ratio of the 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 pricing policy. If it is less than one it implies implicit taxation to growers rather than protection through the produce pricing policy. Implicit taxation to a crop means outflow of resources from that crop.

Table -21: Nominal and Effective Protection Coefficients for Wheat under Import Scenario

Year	NPC	EPC	NPC	EPC
	Punjab		Sindh	
2016-17	1.12	1.56	1.12	1.32
2017-18	1.03	1.00	1.03	1.15
2018-19	0.85	0.78	0.85	0.83
2019-20	0.71	0.62	0.75	0.77
2020-21	0.72	0.63	0.78	0.79
2021-22	0.50	0.41	0.55	0.49

73. Nominal Protection Coefficients (NPCs) for wheat under import scenario are produced in Table-22. It is evident from the data in the referred table that NPC values for Punjab province remained less than one during 2018-19 to 2021-22 ranging 0.50 to 0.85. Its main reason is that international price of wheat remained higher during 2018-19 to 2021-22.

74. Similarly, NPC numeric for Sindh province also remained less than one in 2018-19 to 2021-22. It ranged from 0.55 to 0.85. The main reason is that the international price of wheat remained elevated during 2018-19 to 2021-22.

Table -22: Nominal and Effective Protection Coefficients for Wheat under Export Scenario

Year	NPC	EPC	NPC	EPC
	Punjab		Sindh	
2016-17	1.33	2.29	1.33	1.87
2017-18	1.67	2.00	1.68	3.63
2018-19	1.35	1.46	1.36	2.03
2019-20	1.15	1.15	1.16	1.63
2020-21	1.19	1.19	1.19	1.57
2021-22	0.80	0.71	0.80	0.79

4.8.2 Effective Protection Coefficient (EPC)

75. Dissimilar to 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 the net incentive and disincentive effects of all policies affecting prices of tradable inputs and output. EPC greater than one means that private profit is higher than that would be without government intervention in the input/ output markets. In distinction EPC less than one indicates that net effect of policies which change prices of inputs and output reduces private profit in wheat cultivation. In the former case, there is domestic protection to the producers of wheat while in the latter case the producers are indirectly taxed which depresses domestic production.

76. Table-21 and Table-22 present EPC estimates for wheat. Under the import scenario, EPC coefficients is same situation of the NPC remained less than one for Punjab (which may be due to relatively less increase in input prices as compared with the price of wheat).

77. It is observable from the data in the referred tables that NPC and EPC estimate increased during 2017-18 over 2016-17. Its main reason was the decline in the international price of wheat during 2017-18 and 2016-17. The international market price of wheat in 2017-18 was US\$ 229/ tonne which decreased to US\$ 197/ tonne in 2016-17. As social prices of wheat and production inputs are based on import and export price of wheat which are derived from the international price, NPC and EPC estimates change accordingly.

4.8.3 Domestic Resource Cost Coefficient (DRC)

78. DRC is the ratio of the social cost of domestic factors to value-added at social prices. If DRC is less than one it implies comparative advantage as the domestic production can save foreign exchange at costs less than the corresponding cost of imports. When DRC is greater than one, it indicates a comparative disadvantage in domestic production as in such situations import of a commodity is cheaper. However, it should be noted that DRC varies with changes in the opportunity cost of non-tradable inputs as well as the social value of output. Based on cost of production of an average farmer and import prices of wheat, DRC for Punjab and Sindh are estimated and produced in Table-23. Detailed data on private and social profitability for the study period are produced in Annex- XIV- XV.

Table - 23 Domestic Resource Cost Coefficient (DRC) for Wheat in Punjab and Sindh Provinces.

Year	Under the import situation		Under the export situation	
	Punjab [2]	Sindh [3]	Punjab [4]	Sindh [5]
2016-17	1.48	1.12	2.17	1.58
2017-18	0.95	1.03	1.90	3.25
2018-19	0.73	0.77	1.38	1.88
2019-20	0.57	0.66	1.05	1.41
2020-21	0.45	0.60	0.84	1.20
2021-22	0.24	0.32	0.42	0.52

79. It is noticeable from data in the Table-23 that under import scenario, Domestic Resource Cost Coefficients (DRCs) are substantially less than one which indicates Pakistan's comparative advantage in wheat production. In other words, domestic resource cost would be less than the corresponding import cost in case we have to import wheat. Therefore, it would be an economic suggestion to invest in wheat production at home rather import.

80. On the other hand, under export situation, DRC coefficients do not indicate comparative advantage as most of the time these have happened to be greater than one. It implies that Pakistan should not promote wheat production for export.

4.9 Support Price of Wheat in Selected Countries

81. The price policy for wheat is being adopted by various countries in varying degrees. Australian Wheat Board deals in part of the produce through Pool Pricing without any state intervention. The data on the minimum guaranteed producer prices of wheat for 2019-20 to 2021-22 crop in main producing countries are given in table-24 below:

82. The producer prices of wheat in China remained higher than support price of wheat in Pakistan and all other countries during the last 3 years. India is showing a continuous increase in MSP of wheat in both currencies' terms. In USA, the crop insurance pricing has increased. In Pakistan, the Minimum Support Price has increased by 22 percent over 2020-21, which is still lower to Australia, China and USA and marginally lower than India. Procurement price in Brazil remained lower than MSP in Pakistan during 2021-22.

Table-24: Support Price of Wheat in Selected Countries

Country	(Rs per 40 kgs)		
	2019-20	2020-21	2021-22
Australia [1]	1,417	1,751	2,893
China [2]	2,973	2,973	2,999
India [3]	2,046	2,140	2,240
USA [4]	1,546	1,705	2,576
Brazil [5]	1,205	1,289	2,129
Pakistan	1,400	1,800	2,200

Notes:

[1] <http://image.info.cargill.com/lib/>

[2] <https://www.fas.usda.gov/data/china->

[3] Ministry of Agriculture & Farmers Welfare, Government of India.

[4] <https://www.ag360insurance.com/crop-insurance-pricing/>

[5] <https://www.cepea.org.br>

a) Exchange Rate: \$ 1 = PKR 241.962, PES- 2021-22.

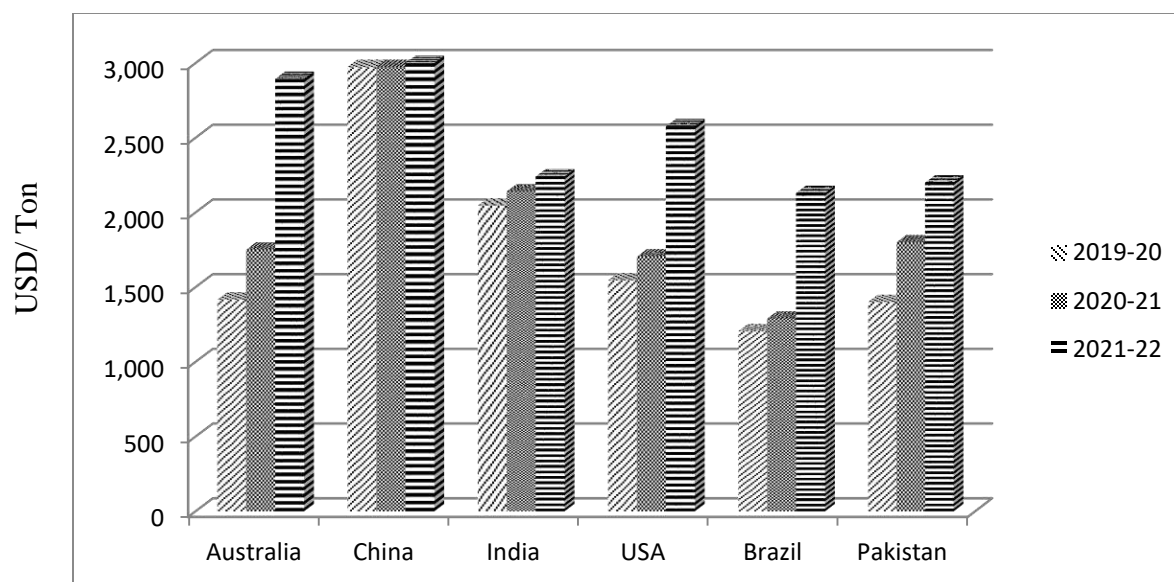


Fig-15: Support/ Procurement Price of Wheat in Selected Countries

4.9.1 Impact of Increase in Support Price of Wheat on Consumer Prices Index (CPI) and Average Household Expenditure

83. Expenditure on wheat has a fairly large share in average household budget. Accordingly, wheat and its products are included in the basket of goods used in estimating the Consumer Price Index (CPI). The support price of wheat affects both the household expenditure and CPI via consumer prices of wheat flour and its products. Any change in the price of wheat and general price level in the economy impacts on the household budget. The details of analysis are presented in Annex-XVI, while a summary of the results is provided in Table-25. Major findings of the analysis are discussed as under:

4.9.2 Impact on CPI

84. The Pakistan Bureau of Statistics (PBS) has estimated changes in CPI as a result of increase in support price of wheat and wheat flour over the existing level of Rs. 2,200 per 40 kgs in 2021-22. The analysis is based on the assumption that the market prices of wheat and wheat flour would increase in the same proportion as the support price. The impact of increase in the support price of wheat on CPI and average household expenditure are given in Table-25.

85. It is evident from the Table-25 that increase of Rs 300 per 40 kgs over the existing support price of wheat is expected to raise the CPI by 0.28 per cent, other things remaining the constant. In case the support price of wheat is enhanced by Rs. 800, Rs.1,300 and Rs.1,800 per 40 kgs, the CPI is likely to rise by 0.52, 0.68 and 0.82 percent, respectively.

Table-25: Impact of Increase in Wheat Prices on CPI and Average Household Expenditure

Support price	Wheat price PBS	CPI(Urban)w.r.t corresponding year(%)	Increase in annual expenses on the basis of average per capita wheat availability @ 115kgs per year	
			per person	
(Rs per 40 kg)	(Rs per 10 kg)	(Per cent)	----- Rupees -----	
*2,200	767.87	-	-	-
2,500	842.87	26.23	862	5,379
3,000	967.87	26.71	2,300	14,352
3,500	1,092.87	27.50	3,737	23,319
4,000	1,217.87	28.30	5,175	32,292

Sources: 1. Pakistan Bureau of Statistics (PBS), Islamabad.

2. Annex-XIV

*Existing Support price for 2021-22 wheat crop.

**HH Size 6.24 as in HIES 2018-19

@ As Recommended by M/o NFS&R

Note: Impact of wheat price has been calculated by assuming incremental charges of Rs .500/- per 40 kg of August ,2022.

86. According to the above analysis, increase of Rs. 300 in the support price of wheat over the existing level of Rs. 2,200 per 40 kgs in 2021-22 would increase the annual expenditure by Rs. 862 per person and Rs. 5,379 per average household, other factors remaining constant. While the monthly expenses on wheat consumption due to increase of Rs. 300 per 40 kgs in the support price of wheat would rise by Rs. 75 per person and Rs. 468 per household. Likewise, the increase of Rs. 1,800 per 40 kgs over the existing support price would bring additional expenditure of Rs.5,175 per capita per year and Rs 32,292 per household. The above results are based on the assumption that increases in the support price of wheat are proportionately reflected in prices of wheat flour and other wheat products.

5. CONSULTATIVE MECHANISM IN PRICE FORMULATION OF WHEAT

87. Annual meeting of the API Committee on wheat was held on 16th August 2022. The meeting was presided by the Federal Secretary, Ministry of National Food Security & Research and attended by the representatives of the wheat growers, growers' associations, chambers of agriculture, crop experts, policy makers and officials of the Federal and Provincial Governments concerned with wheat production and marketing. The meeting discussed the issues relating to production and marketing of wheat including prices of inputs and cost of production. A number of constraints impacting on farm production in general and wheat in particular were also highlighted. Future prospects of wheat crop in the changing scenario also engaged the attention of the committee for some time.

88. Farmers and representatives of technical service providing departments discussed and shared about the productivity, inputs, and farm management issues. Some of the representatives raised the issues regarding DAP high prices, as they cannot afford DAP and without it the production of wheat cannot be enhanced. The taxes charged double in the electricity bills on tube wells should be withdrawn, as poor farmers cannot pay such inflated bills. The population is increasing, conversion of agriculture land into housing societies be stopped immediately. Interest free or low markup loans may be issued to farmers. Whenever Government announced better MSP, wheat had been exported and vice versa. It is need of the time that Government announces MSP at par with the international price. Farmers also informed that due to mismanagement of irrigation and canal water situation became worse for small growers.

89. The representative highlighted the issue of spread of uncertified seed amongst the small holders who are not aware of the latest and HYV seeds. The meeting also highlighted the need for development of suitable technology package for small holders in order for them to retain the activity on sustainable lines.

6. PARITY BETWEEN PRICES OF FERTILIZERS AND WHEAT

90. The parity ratio indicates the quantity of wheat required to buy one nutrient unit of fertilizer. Higher the ratio means lower the purchasing power of wheat, as more units of the commodity are needed to buy a given quantity of fertilizer and vice versa. A favorable parity will be required to stimulate fertilizers application towards optimal level. As the prices of inputs and outputs do not change proportionately, the parity ratios may favour or go against the output level. Hence, it is important to monitor and analyze the parity ratios between prices of wheat and fertilizers (Table-26).

91. In order to study the overtime changes in the purchasing power of wheat in terms of nitrogen and phosphatic fertilizers, the parity ratios between fertilizer nutrients and wheat have been calculated for the period of 2010-11 to 2021-22.

92. The parity ratios between market prices of fertilizers and wheat show that the quantity of wheat needed to buy one nutrient tonne of N fertilizer has fluctuated between 1.67 and 2.90 tonnes during the period under consideration. Similarly, the parity ratios between prices of wheat and those of phosphatic fertilizer have fluctuated from 1.16 to 6.26 units. The ratio dipped to the lowest level of 1.67 in 2010-11. However, the parity ratio jumped to the highest level of 2.90 in 2011-12, a rise of 74 per cent. It implies that the purchasing power of wheat for N fertilizer deteriorated by 74 per cent. However, due to the appreciated market prices of wheat, the position gradually improved in the following five years as compared with the previous year and 1.35 units of wheat were required to buy one unit of N fertilizer during 2021-22.

Table-26: Parity between Market Prices of Fertilizers and Wheat: 2010-11 to 2021-22

Year	Price of fertilizer		Market price of wheat	Unites of wheat needed to buy one unit of fertilizer	
	N	P		N	P
	----- Rs per tonne -----				
2010-11	37,700	97,987	22,625	1.67	4.33
2011-12	68,913	148,600	23,750	2.90	6.26
2012-13	74,783	138,324	29,125	2.57	4.75
2013-14	78,700	137,330	31,250	2.52	4.39
2014-15	82,043	147,104	29,525	2.77	4.98
2015-16	59,565	97,916	30,162	1.97	3.24
2016-17	59,780	78,780	29,900	2.00	2.63
2017-18	69,560	109,735	59,475	1.84	1.16
2018-19	80,430	93,574	33,295	2.41	2.81
2019-20	83,430	125,048	36,700	2.27	3.40
2020-21	80,780	124,173	47,600	1.69	2.60
2021-22	84,810	276,640	62,675	1.35	4.41

Sources: i) Directorate of Agriculture, Punjab and Sindh for market prices of wheat.
ii) Fertilizer prices have been worked out from the prices of Urea and DAP used in COP estimates by the API for the relevant crop year.

93. The parity ratio for P-wheat prices generally hovered around 4.33 upto 2010-11. In 2011-12, the parity ratio peaked at 6.26 owing to record high prices of P-fertilizer in the world. In 2012-13, prices of P fertilizer and wheat moved in the opposite direction which again improved the purchasing power of wheat in terms of Phosphatic fertilizer by 24 per cent. In the current year 2021-22, prices of P fertilizer and wheat moved in the opposite direction, which again improved the purchasing power of wheat in terms of Phosphatic fertilizer by (70) percent.

7. MAJOR WHEAT VARIETIES AND THEIR YIELD POTENTIAL

94. Seed plays key role in increasing food and fiber production to meet the increasing demands of the people, and is a focus around which strategies to boost crop yields can be built. It is a vital input in crop production. The role of seed in providing sustainable crop production is mainly through new varieties. Seed is the cheapest input in crop production process. Crop status largely depends on the seed materials used for sowing. Response of other inputs in crop production depends on seed material used. The seed required for raising crop is quite small and its cost is so less as compared to other inputs. This emphasizes the need for increasing the areas

under quality seed production. In this regard, around 22 wheat varieties have been evolved since 2010 onwards by the wheat research institutions at country level. The list of these varieties describing year of release and yield potential is given at Annex- XVIII.

95. The yield potential of major varieties range between 5000 - 8000 kgs per hectare. The highest yield potential of Benazir 13, Galaxy, Hammal 13, Punjab-11 varieties is observed between 6500 - 7000 kgs per hectare followed by Millat-11, AARI-11, Punjab-11, NARC 2011, AAS -11, Atta - Habib, Amin - 2008, Siren varieties and their yield potential is estimated between 6000 - 6500. Moreover, Tijaban-2010, Janbaz, KT-2009, Kohat-2010, Dharabi 11, Shahkar - CCRI, NIFA Lalma are varieties with minimum yield potential, fluctuating between 5000 to 6000 kgs per hectare. If these varieties are adopted for vast cultivation in their specified areas with recommended production technology and timely supply of inputs and application, the overall yield per hectare would certainly improve at the country level and resultant production will boost further.

8. WHEAT YIELD AMONG COMPETING COUNTRIES 2020 CROP

96. Wheat, the most popular cereal crop of world, covers the acreage that no other cereal crop can ever get. Global wheat cultivation by 126 countries has occupied an area of around 219.01 million hectares during 2020 crop with a total production of 760.93 million tonnes. The world top 30 producing countries contribute 93.15 per cent of total area and 92.65 per cent of total production as narrated in the Table- 27 and 28.

97. In terms of wheat area India is on the top with 31.36 million hectares followed by Russian Federation with 28.86 million hectares, China, mainland with 23.38 million hectares, USA with 14.87 and Pakistan 8.8 million hectares lies at 8th number in this regard with 4 per cent global share.

98. In terms of wheat production, China, mainland with 134.25 million tonnes is on the top followed by India with 107.59, Russian Federation 85.90 million tonnes and USA with 49.69 million tonnes. However, Pakistan 25.25 million tonnes stands at 7th in wheat production of the world.

99. In terms of yield per hectare, New Zealand with 9933.21 kgs, Belgium 8,946.27, Netherlands 8,555.96 kgs per hectare followed by Denmark 8,098.71 kgs per hectare. It is an alarming situation that Pakistan ranks at 65th in terms of yield at 2867.51 kgs per hectare while India lies at 46th position with 3431.13 kgs per hectare. However, the world average yield of wheat is 3474.44 kgs per hectare (Annex- XVII).

Table-27: Wheat Area in Major Wheat Producing Countries Of the World:2020 Crop

S.No.	Country	Area in million hectares	per cent share in world area
1	India	31.36	14.32
2	Russian Federation	28.86	13.18
3	China, mainland	23.38	10.68
4	United States of America	14.87	6.79
5	Kazakhstan	12.06	5.51
6	Canada	10.02	4.57
7	Australia	9.86	4.50
8	Pakistan	8.80	4.02
9	Iran (Islamic Republic of)	7.58	3.46
10	Turkey	6.91	3.16
11	Argentina	6.73	3.07
12	Ukraine	6.56	3.00
13	France	4.51	2.06
14	Morocco	2.85	1.30
15	Germany	2.84	1.29
16	Afghanistan	2.67	1.22
17	Brazil	2.43	1.11
18	Poland	2.37	1.08
19	Romania	2.28	1.04
20	Iraq	2.14	0.98
21	Spain	1.91	0.87
22	Algeria	1.85	0.84
23	Ethiopia	1.83	0.84
24	Italy	1.71	0.78
25	United Kingdom	1.39	0.63
26	Egypt	1.37	0.63
27	Uzbekistan	1.35	0.62
28	Syrian Arab Republic	1.35	0.62
29	Bulgaria	1.20	0.55
30	Hungary	0.94	0.43
Total Of 30 Country Area		204.00	93.15
Total Of 126 Country World Area		219.01	100.00

Source: FAO Production Year Book 2020

Table-28: Wheat Production in Major Wheat Producing Countries Of the World:2020 Crop

S.No.	Country	Production in million tonnes	per cent share in world Production
1	China, mainland	134.25	17.64
2	India	107.59	14.14
3	Russian Federation	85.90	11.29
4	United States of America	49.69	6.53
5	Canada	35.18	4.62
6	France	30.14	3.96
7	Pakistan	25.25	3.32
8	Ukraine	24.91	3.27
9	Germany	22.17	2.91
10	Turkey	20.50	2.69
11	Argentina	19.78	2.60
12	Iran (Islamic Republic of)	15.00	1.97
13	Australia	14.48	1.90
14	Kazakhstan	14.26	1.87
15	Poland	12.43	1.63
16	United Kingdom	9.66	1.27
17	Egypt	9.00	1.18
18	Spain	8.14	1.07
19	Romania	6.75	0.89
20	Italy	6.72	0.88
21	Brazil	6.35	0.83
22	Iraq	6.24	0.82
23	Uzbekistan	6.16	0.81
24	Ethiopia	5.48	0.72
25	Afghanistan	5.19	0.68
26	Hungary	5.12	0.67
27	Czechia	4.90	0.64
28	Bulgaria	4.85	0.64
29	Lithuania	4.82	0.63
30	Denmark	4.07	0.53
Total Of 30 Country Production		704.98	92.65
Total Of 126 Country World Production		760.93	100.00

Source: FAO Production Year Book 2020

9. PRODUCTION, PROCUREMENT, MARKET AND SUPPORT PRICES OF WHEAT

100. During 2016-17 to 2021-22, wheat production has ranged between 25.19 to 27.29 million tons. Procurement has been in the range of 4.03 to 6.59 million tons. The wheat procurement by the public sector has varied from 16.00 to 25.88 per cent of the respective production. The Federal Government announced support price of wheat annually which is acceptable for Provinces. However, during 2021-22 crop Sindh has differed with the Federal Government's support price of wheat Rs 1,800/ 40kgs and announced Rs. 2,000/ 40 kgs for Sindh. The average market prices during the period under review for Punjab is remained below the support price except 2019-20 and 2021-22 when the price surpassed the support price, the market price during 2021-22 was higher than support prices.

Table-29: Production, Procurement, Market and Support Prices of Wheat: 2016-17 to 2021-22

Crop year (May-April)	Production	Procure- Ment	Procurement as percent of production	Support price	Average market price (May-July)*
	-----Million tons-----		Per cent	----Rupees per 40 kgs----	
2016-17	26.61	6.51	24.46	1,300	1,196
2017-18	25.51	6.10	23.91	1,300	1,186
2018-19	25.19	4.03	16.00	1,300	1,221
2019-20	25.46	6.59	25.88	1,400	1,469
2020-21**	27.29	5.83	21.36	1,800	1,858
2021-22	26.39	6.33	23.99	2,200	2,464

*Average of Punjab and Sindh

** The support and average prices of Punjab only.

Source: PASSCO and Provincial Food Departments.

10. WHEAT PROCUREMENT TARGETS AND ACHIEVEMENTS

101. The Federal Government and Province-wise targets for 2021-22 crop with their achievements are shown in Table-30.

Table-30: Procurement Targets and Achievements: 2021-22 Wheat Crop

Province/agency	Target	Achievement	Achievement as per cent of target
	----Million tones -----		Per cent
Pakistan			
- Provincial Food Departments	6.7	5.365	80.07%
- PASSCO	1.2	1.267	105.58%
Punjab			
- Food Department	5.00	4.435	88.7%
- PASSCO	1.010	1.064	105.35%
Sindh			
- Food Department	1.40	0.9	64.28%
- PASSCO	0.140	0.147	105.00%
K.P.K			
- Food Department	0.20	00	00
- PASSCO	NIL	NIL	NIL
Balochistan			
- Food Department	0.10	0.03	30%
- PASSCO	0.050	0.056	112.00%

Source: Ministry of National Food Security & Research, Provincial Food Department and PASSCO

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Officers

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| 7. Mr. Sher Ahmed Khan | Assistant Private Secretary
(Composed the Report) |
| 8. Mr. Shamir Ahmed | Assistant Private Secretary |
| 9. Mr . Muhammad Naeem | Machine Operator |

Annex-I

AREA, YIELD AND PRODUCTION OF WHEAT : 2011-12 TO 2021-22

Year	Punjab	Sindh	KPK	Balochistan	Pakistan
AREA ----- Thousand hectares -----					
2011-12	6,482.9	1,049.2	729.3	388.4	8,649.8
2012-13	6,511.3	1,058.4	727.3	363.2	8,660.2
2013-14	6,901.4	1,121.6	776.8	399.5	9,199.3
2014-15	6,979.5	1,106.9	732.5	385.0	9,203.9
2015-16	6,913.9	1,154.5	772.3	382.9	9,223.6
2016-17	6,660.2	1,169.5	748.6	394.1	8,972.4
2017-18	6,559.8	1,089.6	753.4	394.5	8,797.3
2018-19	6,495.9	1,052.7	739.6	389.6	8,677.8
2019-20	6,515.3	1,134.2	727.3	427.9	8,804.7
2020-21	6,746.0	1,202.5	761.8	458.0	9,168.3
2021-22	6,559.8	1,181.7	760.9	474.7	8,977.1
YIELD ----- kgs per hectare -----					
2011-12	2,736	3,585	1,550	2,170	2,714
2012-13	2,855	3,400	1,714	2,115	2,794
2013-14	2,860	3,568	1,755	2,191	2,824
2014-15	2,763	3,318	1,720	2,265	2,726
2015-16	2,824	3,321	1,813	2,276	2,779
2016-17	3,073	3,344	1,824	2,364	2,973
2017-18	2,924	3,340	1,756	2,371	2,850
2018-19	2,829	3,590	1,795	2,221	2,806
2019-20	2,978	3,393	1,554	2,027	2,868
2020-21	3,098	3,362	1,787	2,531	2,996
2021-22	3,054	3,182	1,815	2,648	2,944
PRODUCTION ----- Thousand tonnes -----					
2011-12	17,738.9	3,761.4	1,130.3	842.7	23,473.3
2012-13	18,587.0	3,598.7	1,246.7	768.0	24,200.4
2013-14	19,738.9	4,002.1	1,363.1	875.3	25,979.4
2014-15	19,281.9	3,672.2	1,259.9	872.0	25,086.0
2015-16	19,526.7	3,834.6	1,400.4	871.3	25,633.0
2016-17	20,466.4	3,910.4	1,365.1	931.8	26,673.7
2017-18	19,178.6	3,639.5	1,322.7	935.4	25,076.2
2018-19	18,377.2	3,778.9	1,327.6	865.3	24,349.0
2019-20	19,401.9	3,848.1	1,130.3	867.2	25,247.5
2020-21	20,900.0	4,043.2	1,361.6	1,159.3	27,464.1
2021-22	20,032.0	3,759.7	1,381.0	1,257.1	26,429.8

Sources:

1. For 2011-12 to 2019-20: Wheat Policy Analysis For 2020-21 Crop
2. For 2020-21: Respective Agriculture Provincial Departments.
3. For 2021-22: Provisional estimate of Punjab and Sindh and Second estimate of KP and Balochistan provided by Respective Agriculture Provincial Departments.

AREA, YIELD AND PRODUCTION OF WHEAT : 2011-12 TO 2021-22

Year	Punjab	Sindh	KPK	Balochistan	Pakistan
AREA ----- Thousand acres -----					
2011-12	16,019.9	2,592.7	1,802.2	959.8	21,374.5
2012-13	16,090.1	2,615.4	1,797.1	897.5	21,400.1
2013-14	17,054.0	2,771.6	1,919.6	987.2	22,732.4
2014-15	17,247.0	2,735.3	1,810.1	951.4	22,743.8
2015-16	17,084.9	2,852.9	1,908.4	946.2	22,792.4
2016-17	16,458.0	2,890.0	1,849.9	973.9	22,171.7
2017-18	16,209.9	2,692.5	1,861.7	974.8	21,739.0
2018-19	16,052.0	2,601.3	1,827.6	962.7	21,443.7
2019-20	16,100.0	2,802.7	1,797.2	1,057.4	21,757.3
2020-21	16,670.0	2,971.5	1,882.5	1,131.8	22,655.8
2021-22	16,209.9	2,920.1	1,880.3	1,173.0	22,183.3
YIELD ----- kgs per acre -----					
2011-12	1,107	1,451	627	878	1,098
2012-13	1,155	1,376	694	856	1,131
2013-14	1,157	1,444	710	887	1,143
2014-15	1,118	1,343	696	917	1,103
2015-16	1,143	1,344	734	921	1,125
2016-17	1,244	1,353	738	957	1,203
2017-18	1,183	1,352	710	960	1,154
2018-19	1,145	1,453	726	899	1,135
2019-20	1,205	1,373	629	820	1,160
2020-21	1,254	1,361	723	1,024	1,212
2021-22	1,236	1,288	734	1,072	1,191
PRODUCTION ----- Thousand tonnes -----					
2011-12	17,738.9	3,761.4	1,130.3	842.7	23,473.3
2012-13	18,587.0	3,598.7	1,246.7	768.0	24,200.4
2013-14	19,738.9	4,002.1	1,363.1	875.3	25,979.4
2014-15	19,281.9	3,672.2	1,259.9	872.0	25,086.0
2015-16	19,526.7	3,834.6	1,400.4	871.3	25,633.0
2016-17	20,466.4	3,910.4	1,365.1	931.8	26,673.7
2017-18	19,178.6	3,639.5	1,322.7	935.4	25,076.2
2018-19	18,377.2	3,778.9	1,327.6	865.3	24,349.0
2019-20	19,401.9	3,848.1	1,130.3	867.2	25,247.5
2020-21	20,900.0	4,043.2	1,361.6	1,159.3	27,464.1
2021-22	20,032.0	3,759.7	1,381.0	1,257.1	26,429.8

Source:

1. For 2011-12 to 2019-20: Wheat Policy Analysis For 2020-21 Crop
2. For 2020-21: Respective Agriculture Provincial Departments.
3. For 2021-22: Provisional estimate of Punjab and Sindh and Second estimate of KP and Balochistan provided by Respective Agriculture Provincial Departments.

AREA, YIELD AND PRODUCTION OF WHEAT BY PROVINCE AND BY IRRIGATION: 2019-20 TO 2021-22

Country/ Province	Area			Change over last year	Yield per hectare			Change over last year	Production			Change over last year
	2019-20	2020-21	2021-22		2019-20	2020-21	2021-22		2019-20	2020-21	2021-22	
	000 ha				Kgs				000 tonnes			
IRRIGATED												
PAKISTAN	7,629.5	7,975.6	7,876.9	-1.24	3,084	3,216	3,138	-2.42	23,530.7	25,651.7	24,720.8	-3.63
PUNJAB	5,784.0	5,999.8	5,882.8	-1.95	3,157	3,282	3,210	-2.20	18,262.9	19,694.0	18,886.0	-4.10
SINDH	1,101.7	1,167.4	1,156.4	-0.94	3,432	3,400	3,206	-5.71	3,780.5	3,968.7	3,707.0	-6.59
KPK	336.6	376.4	375.5	-0.24	1,903	2,280	2,356	3.36	640.6	858.1	884.8	3.11
BALUCHISTAN	407.2	432.0	462.2	6.99	2,079	2,618	2,689	2.73	846.7	1,130.9	1,243.0	9.91
UNIRRIGATED												
PAKISTAN	1,175.2	1,192.7	1,100.2	-7.76	1,461	1,520	1,553	2.22	1,716.8	1,812.4	1,709.0	-5.71
PUNJAB	731.3	746.2	677.0	-9.27	1,558	1,616	1,693	4.74	1,139.0	1,206.0	1,146.0	-4.98
SINDH	32.5	35.1	25.3	-27.92	2,080	2,123	2,083	-1.86	67.6	74.5	52.7	-29.26
KPK	390.7	385.4	385.4	0.00	1,253	1,306	1,287	-1.45	489.7	503.5	496.2	-1.45
BALUCHISTAN	20.7	26.0	12.5	-51.92	990	1,092	1,128	3.27	20.5	28.4	14.1	-50.35
TOTAL												
PAKISTAN	8,804.7	9,168.3	8,977.1	-2.09	2,868	2,996	2,944	-1.72	25,247.5	27,464.1	26,429.8	-3.77
PUNJAB	6,515.3	6,746.0	6,559.8	-2.76	2,978	3,098	3,054	-1.43	19,401.9	20,900.0	20,032.0	-4.15
SINDH	1,134.2	1,202.5	1,181.7	-1.73	3,393	3,362	3,182	-5.38	3,848.1	4,043.2	3,759.7	-7.01
KPK	727.3	761.8	760.9	-0.12	1,554	1,787	1,815	1.54	1,130.3	1,361.6	1,381.0	1.42
BALUCHISTAN	427.9	458.0	474.7	3.65	2,027	2,531	2,648	4.62	867.2	1,159.3	1,257.1	8.44

Sources: Respective Agriculture Provincial Departments.

**DISTRICT- WISE AREA, YIELD AND PRODUCTION OF WHEAT
AVERAGE OF 2019-20 TO 2021-22**

Area: 000 ha
Production: 000 tonnes
Yield: kgs/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
PUNJAB						KPK					
1	Bahawalnagar	415.72	1537.49	5.83	3698.38	1	D.I.Khan	59.20	118.76	0.45	2006.14
2	R.Y.Khan	292.15	1015.80	3.85	3477.00	2	Swat	55.69	113.35	0.43	2035.46
3	Bahawalpur	297.77	985.35	3.74	3309.08	3	Charsadda	41.70	88.15	0.33	2113.87
4	Jhang	268.35	855.84	3.25	3189.22	4	Mardan	41.51	84.68	0.32	2040.24
5	Faisalabad	244.24	816.00	3.09	3340.96	5	Peshawar	35.32	76.27	0.29	2159.09
6	Muzaffargarh	255.82	802.01	3.04	3135.09	6	Swabi	36.55	75.98	0.29	2078.69
7	D.G.Khan	238.10	759.13	2.88	3188.37	7	Mansehra	40.65	66.33	0.25	1631.72
8	Layyah	269.02	757.55	2.87	2816.02	8	Nowshera	25.82	62.58	0.24	2424.11
9	Khanewal	223.04	737.50	2.80	3306.52	9	Bunir	48.06	62.36	0.24	1297.46
10	Rajanpur	212.50	724.14	2.75	3407.77	10	Haripur	34.30	58.76	0.22	1713.30
11	Gujranwala	223.32	703.86	2.67	3151.77	11	Dir Lower	28.95	55.93	0.21	1932.23
12	Sheikhupura	203.80	661.83	2.51	3247.50	12	Dir Upper	24.22	43.17	0.16	1782.79
13	Vehari	187.07	648.66	2.46	3467.55	13	Kurram AG.	23.39	40.39	0.15	1727.16
14	Sargodha	205.55	588.74	2.23	2864.19	14	Shangla	24.71	38.22	0.14	1546.98
15	Lodhran	166.91	560.76	2.13	3359.63	15	Malakand	26.20	33.52	0.13	1279.50
16	Multan	164.93	559.21	2.12	3390.68	16	Bajour AG.	35.50	32.06	0.12	903.01
17	Okara	146.04	541.74	2.05	3709.62	17	Bannu	13.42	29.44	0.11	2194.02
18	Mianwali	209.03	536.57	2.03	2566.98	18	Kohat	20.64	29.07	0.11	1408.22
19	T.T.Singh	150.05	519.68	1.97	3463.41	19	Tank	14.67	24.69	0.09	1683.11
20	Bhakkar	186.04	491.99	1.87	2644.57	20	Abbottabad	14.05	22.21	0.08	1581.30
21	Hafizabad	144.48	481.76	1.83	3334.55	21	Lakki Marwat	18.04	19.49	0.07	1080.50
22	Kasur	133.77	471.61	1.79	3525.57	22	Khyber AG.	10.90	17.76	0.07	1628.57
23	Nankana Sahib	127.49	457.64	1.74	3589.56	23	Chitral	8.27	15.77	0.06	1906.07
24	Sialkot	155.31	418.46	1.59	2694.44	24	Battagram	7.85	12.10	0.05	1542.38
25	Sahiwal	117.30	413.18	1.57	3522.49	25	Hangu	9.22	11.62	0.04	1259.53
26	Pakpattan	105.41	385.47	1.46	3656.91	26	S.Waziristan	8.43	10.80	0.04	1281.40
27	M.B.Din	127.76	373.65	1.42	2924.62	27	Mohmand AG.	7.29	9.34	0.04	1281.88
28	Attock	200.60	344.57	1.31	1717.68	28	N.Waziristan	4.77	7.48	0.03	1568.71
29	Gujrat	148.61	316.43	1.20	2129.26	29	SD Hassan Khel	4.38	5.98	0.02	1364.13
30	Chiniot	92.53	302.25	1.15	3266.37	30	SD Bannu	4.41	5.91	0.02	1338.64
31	Khushab	126.43	267.70	1.02	2117.42	31	Orakzai AG	3.95	5.18	0.02	1311.71
32	Narowal	107.40	266.08	1.01	2477.35	32	SD D.I Khan	3.80	4.11	0.02	1080.61
33	Chakwal	153.43	258.75	0.98	1686.41	33	Karak	9.75	4.11	0.02	421.02
34	Rawalpindi	152.35	244.13	0.93	1602.40	34	SD Kohat	2.66	2.77	0.01	1041.04
35	Lahore	41.30	137.39	0.52	3326.85	35	Kohistan	1.73	2.64	0.01	1530.81
36	Jhelum	77.76	112.40	0.43	1445.53						
37	Islamabad	35.68	55.97	0.21	1568.63						
Sub Total		6607.03	20111.30	76.27	3043.92	Sub Total		749.98	1290.98	4.90	1721.34
SINDH						BOLUCHISTAN					
1	Sh. Benazirabad	90.51	380.24	1.44	4201.24	1	Nasirabad	84.81	230.30	0.87	2715.38
2	N.Feroze	104.26	376.65	1.43	3612.55	2	Jaffarabad	75.75	204.26	0.77	2696.38
3	Khairpur	105.64	365.45	1.39	3459.27	3	Jhal Magsi	59.38	142.34	0.54	2397.19
4	Ghotki	107.90	355.10	1.35	3291.01	4	Khuzdar	48.13	109.05	0.41	2265.85
5	Sanghar	110.40	353.03	1.34	3197.82	5	Dera Bughti	24.21	51.79	0.20	2139.03
6	Dadu	80.68	253.11	0.96	3137.33	6	Lasbela	18.14	44.91	0.17	2475.46
7	Mirpurkhas	63.45	193.89	0.74	3055.81	7	Sibi	17.25	37.33	0.14	2163.60
8	Matiari	42.01	192.69	0.73	4587.16	8	Barkhan	14.04	31.11	0.12	2215.19
9	Shadadkot	54.57	180.72	0.69	3311.90	9	Awaran	15.47	30.17	0.11	1950.08
10	Larkana	53.37	173.65	0.66	3253.48	10	Kharan	10.21	21.05	0.08	2060.82
11	Sukkur	51.12	152.20	0.58	2977.31	11	Loralai	9.23	19.91	0.08	2158.35
12	Tando Allahyar	32.30	127.45	0.48	3945.68	12	Kachhi	8.70	19.69	0.07	2262.19
13	Umerkot	40.14	118.21	0.45	2944.87	13	Killa Saifullah	8.15	17.76	0.07	2178.93
14	Jamshoro	38.61	113.36	0.43	2935.77	14	Noushki	7.66	16.73	0.06	2184.73
15	Shikarpur	36.30	107.03	0.41	2948.67	15	Kohlu	6.67	16.63	0.06	2494.20
16	Badin	35.83	98.56	0.37	2750.67	16	Chaghi	7.19	11.56	0.04	1607.52
17	Kashmore	36.87	86.49	0.33	2345.80	17	Zhob	5.23	9.70	0.04	1852.92
18	Jacobabad	35.25	79.37	0.30	2251.23	18	Panjgoor	5.20	9.43	0.04	1814.09
19	Hyderabad	15.87	63.10	0.24	3975.00	19	Kalat	3.81	9.00	0.03	2365.42
20	Thatta	18.08	52.44	0.20	2900.06	20	Washuk	4.05	7.80	0.03	1926.64
21	Tando Muhammad	15.99	50.44	0.19	3153.38	21	Mastung	3.25	7.78	0.03	2396.04
22	Tharparkar	2.49	7.66	0.03	3075.79	22	Pishin	4.10	7.77	0.03	1893.77
23	Karachi	1.14	2.81	0.01	2474.90	23	Turbat	2.72	6.64	0.03	2444.63
						24	Quetta	2.65	5.82	0.02	2201.26
						25	Harnai	2.66	5.49	0.02	2067.51
						26	K.Abdullah	1.81	3.69	0.01	2038.48
						27	Musa Khel	1.50	2.36	0.01	1573.83
						28	Sherani	0.88	1.62	0.01	1835.69
						29	Ziarat	0.48	0.83	0.00	1736.23
						30	Gwadar	0.00	0.00	0.00	#DIV/0!
Sub Total		1172.79	3883.65	14.73	3311.46	Sub Total		453.32	1082.52	4.11	2387.95
Pak Total								8983.13	26368.44	100.00	2935.33

Notes:

1. Data have been arranged in decending order of production.
2. Percentage shares are calculated on the basis of country total.

ANNEX - IV

PER CAPITA AVAILABILITY OF WHEAT:2018-19 to 2021-22 (MAY-APRIL)

S.No	Description	Production year	2018-19	2019-20	2020-21
		Consumption year	2019-20	2020-21	2021-22
1	Total Population (a)		222.23	226.52	232.76
			-----000 tonnes-----		
2	Opening stocks as on 1st May		3,780	636	731
3	Production of Pakistan		24,349	25,228	27,464
4	Production of AJ&K and GB (b)		122	126	137
5	Imports (c)		0	3612	2,207
6	Exports (wheat and wheat preparations)		48	0	0
7	Closing stocks as on 30th April		636	731	1805
8	Total availability		27,567	28,871	28,734
9	Deduction for seed, feed and wastage @ 10 per cent of production		2,435	2,523	2,746
10	Available for human consumption (item 8 minus item 9)		25,132	26,348	25,988
			-----Kgs/ annum-----		
11	Per capita availability (item 10 divided by item 1)		113	116	112
12	Average per capita availability during 2019-20 to 2021-22			114	

- Notes:
- It includes the population of Pakistan, AJ&K, GB and Afghan Refugees.
 - Due to non-availability of data, production of AJ&K and GB in the past has been estimated on the basis ratio between the production of Pakistan and that of AJ&K and GB
 - Import and export are up to Jul-May 2021-2022.
- Sources:
- For carryover stocks: PASSCO and Provincial Food Departments.
 - For Population, Pakistan Economic Survey 2021-22.
 - For Afghan refugees: Ministry of Kashmir Affairs and Gilgit-Baltistan Government of Pakistan, Islamabad.

Annex- V

INTERNATIONAL PRICES OF US NO-2 HARD RED WINTER AND RED WINTER
WHEAT : 2012-13 TO 2022-23

Year (July - June)	Month	HRW No-2 ---US\$ per tonne---	SRW No-2	Difference between HRW/SRW	
				US\$/tonne	%age
2012-13		347	310	37	11.94
2013-14		318	265	53	20.00
2014-15		266	221	45	20.36
2015-16		211	194	17	8.76
2016-17		197	170	27	15.88
2017-18		230	188	42	22.34
2018-19		232	210	22	10.48
2019-20		220	222	-2	-0.90
2020-21		269	264	5	1.89
2021-22		399	344	55	15.99
2022-23		392	353	39	11.05
	Months				
	July	383	334	49	14.67
	August	383			
	Sept	410	372	38	10.22

Source: International Grains Council, London.

Annex-VI

**IMPORT PARITY PRICES OF WHEAT ON THE BASIS OF US NO 2 HRW AND
SRW (FOB GULF) QUOTED PRICE**

		2022-23 (Jul-Sept)		2021-22		2019-20 to 2021-22	
		HRW	SRW	HRW	SRW	HRW	SRW
		-----US \$ per tonne-----					
1	Average Fob(Gulf) price	392.00	353.00	399.00	344.00	296.00	277.00
2	Freight charges from Gulf port to Karachi	61.00	61.00	61.00	61.00	61.00	61.00
3	Average c&f (Karachi) price in US \$	453.00	414.00	460.00	405.00	357.00	338.00
		-----Rs per tonne-----					
4	Exchange rate as on Sept 30, 2022	228.00	228.00	228.00	228.00	228.00	228.00
5	Average c&f (Karachi) price in Pak Rupees	103,284.00	94,392.00	104,880.00	92,340.00	81,396.00	77,064.00
6	Marine insurance charges @0.05% of C & F cost	52	47	52	46	41	39
7	LC opening charges @0.02% of c&f cost.	21	19	21	18	16	15
8	Stevedoring	1,400	1,400	1,400	1,400	1,400	1,400
9	Provision for handling losses @ 0.5 of C&F cost	516	472	524	462	407	385
10	Survey, Lab Testing Charges, Weightment, wharfage DPP charges & clearing and forwarding charges	43.4	43.4	43.4	43.4	43.4	43.4
11	TCP commission @ 2 % of c&f cost	2,066	1,888	2,098	1,847	1,628	1,541
12	KIBOR @ 15 % for 3 months for 30 days	1,291.05	1,179.90	1,311.00	1,154.25	1,017.45	963.30
13	Landed cost (item 5 to 12) at Karachi	108,672.85	99,441.17	110,329.82	97,310.79	85,948.73	81,451.24
14	Transport cost from Karachi to Multan *	10,980.00	10,980.00	10,980.00	10,980.00	10,980.00	10,980.00
15	Expenses from procurement center to Multan	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
16	Import parity price at procurement center level	118,652.85	109,421.17	120,309.82	107,290.79	95,928.73	91,431.24
		-----Rs per 40 kgs-----					
17	Import parity prices of wheat						
	i) If consumed at Multan	4,746.11	4,376.85	4,812.39	4,291.63	3,837.15	3,657.25
	ii) If consumed at Karachi	4,346.91	3,977.65	4,413.19	3,892.43	3,437.95	3,258.05

Note : * Average transport charges from Karachi port to Punjab at different location of PASSCO storage cities.

Sources:

- i) For fob (Gulf) prices: International Grain Council, UK.
- ii) For, incidental and transport charges from Karachi to Multan, TCP, Karachi.
- iii) For expenses from procurement center to Multan: PASSCO, Lahore.

Annex-VII

IMPORT PARITY PRICES OF WHEAT ON THE BASIS OF FUTURE PRICE OF BLACK SEA

S. No	Item	Oct, 22	Nov,22	Dec,22
		-----US \$ per tonne-----		
1	Average Fob price	324.00	327.00	330.00
2	Freight charges to Karachi	54.00	54.00	54.00
3	Average c&f (Karachi) price in US \$	378.00	381.00	384.00
		-----Rs per tonne-----		
4	Exchange rate as on Sept 30, 2022	228.00	228.00	228.00
5	Average c&f (Karachi) price in Pak Rupees	86,184.00	86,868.00	87,552.00
6	Marine insurance charges @0.05% of C & F cost	43.09	43.43	43.78
7	Lc opening charges @0.02% of c&f cost.	17.24	17.37	17.51
8	Stevedoring	1,400.00	1,400.00	1,400.00
9	Provision for handling losses @ 0.5 of C&F cost	430.92	434.34	437.76
10	Survey, Lab Testing Charges, Weightment, wharfage DPP charges & clearing and forwarding charges	43.40	43.40	43.40
11	TCP commission @ 2 % of c&f cost	1,723.68	1,737.36	1,751.04
12	KIBOR @ 15 % for 3 months for 30 days	1,077.30	1,085.85	1,094.40
13	Landed cost (item 5 to 12) at Karachi	90,919.63	91,629.76	92,339.89
14	Transport cost from Karachi to Multan	10,980.00	10,980.00	19,080.00
15	Expences from procurement center to Multan	1,000.00	1,000.00	1,000.00
16	Import parity price at procurement center level	100,899.63	101,609.76	110,419.89
17	Import parity prices of wheat	-----Rs per 40 kgs-----		
	i) If consumed at Multan	4,035.99	4,064.39	4,416.80
	ii) If consumed at Karachi	3,636.79	3,665.19	3,693.60

Sources:

- i) For fob (Gulf) prices: International Grain Council, UK.
- ii) For, incidental and transport charges, TCP Karachi
- iii) For expenses from procurement centre to Multan: PASSCO, Lahore.

Annex-VII-B

IMPORT PARITY PRICES OF WHEAT ON THE BASIS OF ACUTAL IMPORT BY TCP

S. No	Item	Imports by TCP
		2022-23 (Jul-Aug)
		-----US \$ per tonne-----
1	Average c&f (Karachi) price in US \$	407.49
2	Exchange rate as on Sept 30, 2022	228.00
		-----Rs. per tonne-----
3	Average c&f (Karachi) price in Pak Rupees	92,908
4	Marine insurance charges @0.05% of C & F cost	46
5	Lc opening charges @0.02% of c&f cost.	19
6	Stevedoring	1,400
7	Provision for unforeseen losses @ 0.5 of C&F cost	465
8	Survey, Lab Testing Charges, Weightment, wharfage DPP charges & clearing and forwarding charges	43
9	TCP commission @ 0.2 % of c&f cost	1,858
10	KIBOR @ 15 % for 3 months for 30 days	1,161
11	Landed cost (item 3 to10) at Karachi	97,900
12	Transport cost from Karachi to Multan	10,980
13	Expences from procurement center to Multan	1,000
14	Import parity price at procurement center level	107,880
15	Import parity prices of wheat	-----Rs per 40kgs-----
	i) If consumed at Multan	4,315
	ii) If consumed at Karachi	3,919

Sources:

- i) For c&f Karachi price, TCP
- ii) For, incidental and transport charges, TCP Karachi
- iii) For expenses from procurement centre to Multan: PASSCO, Lahore.

Annex-VIII

EXPORT PARITY PRICES OF WHEAT ESTIMATED FROM US NO 2 HRW (FOB GULF) QUOTED PRICE

S.No	Item	2022-23 (Jul- Sept)		2021-22		2019-20 to 2021-22	
		HRW	SRW	HRW	SRW	HRW	SRW
		-----US \$ per tonne-----					
1	Fob(Gulf) price assuming Fob (Karachi) price	392.00	353.00	399.00	344.00	296.00	277.00
2	Exchange rate as on Sept 30, 2022	228.00	228.00	228.00	228.00	228.00	228.00
3	Fob(Gulf) price assuming Fob (Karachi) price in Pak Rupees	89,376.00	80,484.00	90,972.00	78,432.00	67,488.00	63,156.00
4	Incidental charges: (items i to xi)	11,475.76	11,201.59	11,524.97	11,138.32	10,800.88	10,667.31
	i) Expenses from procurement centre to Multan	700.00	700.00	700.00	700.00	700.00	700.00
	ii) Transport cost from Multan to Karachi including loading and unloading charges	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00
	iii) Cleaning/grading	750.00	750.00	750.00	750.00	750.00	750.00
	iv) Bagging, spillage, loading, unloading & testing	850.00	850.00	850.00	850.00	850.00	850.00
	v) Wharfage, stevedoring, weightment and port charges	70.00	70.00	70.00	70.00	70.00	70.00
	vi) Pre shipment inspection charges	100.00	100.00	100.00	100.00	100.00	100.00
	vii) Export development surcharges @ 0.25% and Withholding tax@ Rs 1.25 of Fob price	1,340.64	1,207.26	1,364.58	1,176.48	1,012.32	947.34
	viii) Insurance charges at port 1 % for one month	74.48	67.07	75.81	65.36	56.24	52.63
	ix) Bank commission & charges 0.25 %	223.44	201.21	227.43	196.08	168.72	157.89
	x) KIBOR @ 15 % for 3 months for 30 days	1,117.20	1,006.05	1,137.15	980.40	843.60	789.45
	xi) Miscellaneous charges (Ghati, Wastage, Godown rent)	250.00	250.00	250.00	250.00	250.00	250.00
5	Export parity price of wheat at procurement centre level(item 1- items 2)	77,900.24	69,282.41	79,447.03	67,293.68	56,687.12	52,488.69
		-----Rs per 40kgs-----					
6	Export parity price at procurement center level	3,116.01	2,771.30	3,177.88	2,691.75	2,267.48	2,099.55

Sources: i) For fob (Gulf) International Grain Council
ii) Incidental and transport charges, TCP, Karachi.
iii) For expenses from procurement centre and transport charges: PASSCO, Lahore.

Annex-IX

AVERAGE FARMER COST OF PRODUCTION ESTIMATES OF WHEAT IN PUNJAB: 2022-23 CROP

S #	Operations / Inputs	Unit	2021-22 crop			2022-23 crop			Change over 2021-22
			Avg # of oprs/ units/ acre	Cost per	Cost per	Avg # of oprs/ units/ acre	Cost per	Cost per	
				unit	acre		unit	acre	
1	2	3	4	5	6=4X5	7	8	9=7X8	10=9-6
1	Land preparation:								
	1.1 Rotavator OR disc plough	# of operation/acre	0.500	2200.0	1100.0	0.500	2,500.0	1,250.0	150.0
	1.2 Ploughing & Planking	# of operation/acre	2.500	1200.0	3000.0	2.500	1,500.0	3,750.0	750.0
	1.3 Laser Leveling	# of operation/acre	0.500	1000.0	500.0	0.500	1,800.0	900.0	400.0
2	Seed and sowing operations:								
	2.1 Seed used	Kg/acre	50.000	75.0	3750.0	50.000	85.0	4,250.0	500.0
	2.2 Labour for seed broadcasting	M.hr/acre	1.000	200.0	200.0	1.000	112.5	112.5	(87.5)
	2.3 Ploughing after broadcasting	# of Operation/acre	1.000	1200.0	1200.0	0.250	1,500.0	375.0	(825.0)
	2.4 Planking after broadcasting	# of Operation/acre	0.500	1000.0	500.0	0.750	1,000.0	750.0	250.0
3	Bund making:								
	3.1 Manual	m.hrs	1.000	100.0	100.0	1.000	112.5	112.5	12.5
	3.2 tractor	Hrs	0.250	1200.0	300.0	0.250	1,500.0	375.0	75.0
4	Plant protection:								
	4.1 Weedicides/pesticides & application	# & application	1.000	1350	1350.0	1.000	2,000.0	2,000.0	650.0
5	Irrigation: (Nos)								
	5.1 Canal	# of Irrigation						350.0	350.0
	5.2 Tubewell Irrigation	# of Irrigation	3.000	875.0	2625.0	3.000	950.0	2,850.0	225.0
	5.3 Mix Irrigation	# of Irrigation	0.500	875.0	437.5	-	-	-	(437.5)
6	Labour for irrigation and water course cleaning	M.days/acre	1.000	1000.0	1000.0	1.000	1,200.0	1,200.0	200.0
7	Farm Yard Manure & application	#of trolley	0.250	3000.0	750.0	0.250	3,200.0	800.0	50.0
8	Fertilizers:								
	8.1 DAP	Bags/acre	1.000	7036.0	7036.0	1.000	12,690.0	12,690.0	5,654.0
	8.2 Urea	Bags/acre	2.000	1860.0	3720.0	2.000	2,330.4	4,660.8	940.8
	8.3 NP	Bags/acre	0.079	4605.0	363.8	0.050	7,400.0	370.0	6.2
	8.4 CAN	Bags/acre	0.240	1631.0	391.4	0.075	2,160.0	162.0	(229.4)
	8.5 Transport and application	Rs./ acre	3.319	100.0	331.9	3.319	115.0	381.7	49.8
9	Cost of Traded inputs	Rs./ acre			28655.6			36,989.5	8,333.9
10	Mark up on investment on item 1 to 8 minus 5(1)	For 6 months			1,719.3			3,698.9	1,979.6
11	Harvesting charges	40 kgs/acre	2.500	1800.0	4500.0	2.500	2,200.0	5,500.0	1,000.0
12	Threshing charges	40 kgs/acre	2.250	1800.0	4050.0	2.250	2,200.0	4,950.0	900.0
13	Land rent	For 6 months	0.500	40,000.0	20000.0	0.500	45,000.0	22,500.0	2,500.0
14	Management Charges	For 6 months	0.500	2,400.0	1200.0	0.500	3,000.0	1,500.0	300.0
15	Average weighted land tax	Rs/acre/ annum	0.500	132.0	66.0	0.500	132.0	66.0	-
16	Total cost of cultivation	Rs/per acre			58991.0	-		75,554.4	16,563.5
17	17.1 Value of wheat bhoosa	Rs/acre			8980.0	30.500	300.0	9,150.0	170.0
	17.2. Subsidy on fertilizers	Rs/acre		1,500	900.0	-	-	-	
18	Net cultivation cost (item 16-17)	Rs/acre			49111.0	-	-	66,404.4	17,293.5
19	Yield	40 Kg/acre			1200.0	-	-	1,220.0	20.0
20	20.1. Cost of production at farm level:	Rs/40 kgs			1,637.0			2,177.2	540.2
	20.2. Cost of production excluding land rent	Rs/40 kgs			970.4			1,439.5	469.1
21	Marketing cost	Rs/40 kgs			40.0	-		45.0	5.0
22	Cost of production at market/procurement centre:								
	22.1 Including land rent	Rs/40 kgs			<u>1,677.03</u>	-		<u>2,222.19</u>	545.2
	22.2 Excluding land rent	Rs/40 kgs			1010.4	-		1,484.5	474.1

Annex-X

AVERAGE FARMER COST OF PRODUCTION ESTIMATES OF WHEAT IN SINDH: 2022-23 CROP

S. No	Operations / Inputs	Unit	Avg # of oprs/ units/ acre	2021-22 crop		Avg # of oprs/ units/ acre	2022-23 crop		Change over 2021- 22
				Cost per unit	Cost per acre		Cost per unit	Cost per acre	
				5	6=4X5		7	8	
1	Land preparation:								
	1.1 Rotavator/disc/5/3hari	# of operation/acre	1.000	2200.0	2200.0	1.000	2,500.0	2,500.0	300.0
	1.2 Ploughing	# of operation/acre	2.000	1200.0	2400.0	2.500	1,300.0	3,250.0	850.0
	1.3 Planking	# of operation/acre	1.000	1100.0	1100.0				(1,100.0)
	1.4 Laser levelling	# of operation/acre	0.500	1300.0	650.0	0.750	1,800.0	1,350.0	700.0
2	Seed and sowing operations:								
	2.1 Seed used	Kg/acre	55.000	80.0	4400.0	55.000	85.0	4,675.0	275.0
	2.2 Labour for seed broadcasting	M.hr/acre	1.000	100.0	100.0	1.000	112.5	112.5	12.5
	2.3 Ploughing in case of broadcasting	# of Operation/acre	1.000	1200.0	1200.0	0.500	1,300.0	650.0	(550.0)
	2.4 Planking in case of broadcasting	# of Operation/acre	1.000	800.0	800.0	1.000	1,100.0	1,100.0	300.0
3	Bund making:								
	3.1 Manual	m.hrs	1.000	100.0	100.0	1.000	112.5	112.5	12.5
	3.2 tractor	Hrs	0.100	1200.0	120.0	0.100	1,300.0	130.0	10.0
4	Weedicides & application	Rs./ acre	1.000	1300.0	1300.0	1.000	1,600.0	1,600.0	300.0
5	Irrigation: (Nos)								
	5.1 Canal	# of Irrigations			53.3			350.0	296.7
	5.2 Tubewell	# of Irrigations	2.000	850.0	1700.0	2.000	950.0	1,900.0	200.0
	5.3 Mixed	# of Irrigations	2.000	600.0	1200.0				(1,200.0)
	5.3 Lift Pump	# of Irrigations	0.551	600.0	330.6	1.000	950.0	950.0	619.4
6	Labour for irrigation and water course cleaning	M.days/acre	1.000	800.0	800.0	1.000	1,200.0	1,200.0	400.0
7	Farm Yard Manure	#of trolley	0.250	3200.0	800.0	0.250	3,500.0	875.0	75.0
8	Fertilizer (bags)								
	8.1 DAP	Bags/acre	1.000	7200.0	7200.0	1.000	12,690.0	12,690.0	5,490.0
	8.2 Urea	Bags/acre	2.000	2000.0	4000.0	2.000	2,330.4	4,660.8	660.8
	8.3 NP	Bags/acre	0.100	4550.0	455.0	0.100	7,400.0	740.0	285.0
	8.4 Transport and application	Rs./ acre	3.200	125.0	400.0	3.200	130.0	416.0	16.0
	Cost of Traded inputs	Rs./ acre			31,255.6			38,911.8	7,656.2
9	Mark up on investment on item 1 to 8 minus 5(1)	KIBOR+5% per annum for 6 months			1,875.3			3,891.2	2,015.8
10	Harvesting charges	40 kgs/acre	2.500	2000.0	5000.0	2.500	2,200.0	5,500.0	500.0
11	Threshing	40 kgs/acre	2.250	2000.0	4500.0	2.250	2,200.0	4,950.0	450.0
12	Land rent	For 6 months	0.500	40000.0	20000.0	0.500	45,000.0	22,500.0	2,500.0
13	Management Charges	For 6 months	0.500	2,400.0	1200.0	0.500	3,000.0	1,500.0	300.0
14	Land tax	Rs/acre/annum	0.500	200.0	100.0	0.500	200.0	100.0	-
15	Drainage cess	For 6 months			24.0			24.0	-
16	Total cost of Cultivation	Rs/acre			62808.2	-		77,727.0	14,918.7
17	17.1 Value of wheat bhoosa	Rs/acre			9000.0	33.000	300.0	9,900.0	900.0
	17.2. Subsidy on fertilizers	Rs/acre			900.0	-	-	-	
18	Net cultivation cost (item 16-17)	Kg/acre			52908.2	-		67,827.0	14,918.7
19	Yield	Rs/40 kgs			1300.0	-		1,320.0	20.0
20	Cost of production at farm level:	Rs/40 kgs			1627.9			2,055.4	427.4
21	Marketing cost	Rs/40 kgs			45.0	-		50.0	5.0
22	Cost of production at market/ procurement centre:	Rs/40 kgs							
23	23.1 Including land rent	Rs/40 kgs			1672.9	-		2,105.36	432.4
	23.2 Excluding land rent	Rs/40 kgs			1057.6	-		1,423.5	366.0

Annex-XI

Cost of Production Estimates for Wheat 2022-23 (Average Farmer)

(PM Task Force on Agriculture)

S #	Operations/Inputs	Unit	Avg No. of Ops-Units/Acre	2022-23 Crop	
				Cost per Unit	Cost per Acre
1	2		3	4	5=3 * 4
1	Land preparation:				
	1.1 Rotavator or disc plough	No. of ops/acre	0.50	5,000	2,500
	1.2 Ploughing & Planking	No. of ops/acre	2.00	2,000	4,000
	1.3 Laser Leveling	No. of ops/acre	0.25	1,600	400
2	Seed and sowing operations:				
	2.1 Seed used	kg/acre	50.00	75	3,750
	2.2 Labour for seed broadcasting	person-hours/acre	1.00	113	113
	2.3 Ploughing after broadcasting	No. of ops/acre	0.00	-	-
	2.4 Planking after broadcasting	No. of ops/acre	1.00	1,000	1,000
3	Bund making:				
	3.1 Manual	person-hours/acre	1.00	113	113
	3.2 Tractor	Hours	0.25	2,000	500
4	Plant protection:				
	4.1 Weedicides & Application	No. & application	1.00	2,000	2,000
5	Irrigation: (Nos)				
	5.1 Canal	No. of irrigation			350
	5.2 Tubewell Irrigation	No. of irrigation	3.00	2,500	7,500
	5.3 Mixed	No. of irrigation	0.00	-	-
6	Labour, irrigation & watercourse	person-days/acre	1.00	1,200	1,200
7	Farm Yard Manure & application	No. of trolley	0.25	3,200	800
8	Fertilizers:				
	8.1 DAP	Bags/acre	1.00	15,000	15,000
	8.2 Urea	Bags/acre	2.00	2,400	4,800
	8.3 Nitrophos	Bags/acre	0.05	7,425	371
	8.4 Calciam Ammonium Nitrate	Bags/acre	0.08	2,205	165
	8.5 Transport and application	Rs./ acre	3.32	110	365
9	Total Cost of Traded inputs	Rs./ acre			44,577
10	Mark-up on items 1-8 minus 5 (1) *	For 6 months			4,458
11	Harvesting charges	40 kg/acre	2.50	2,200	5,500
12	Threshing charges	40 kg/acre	2.25	2,200	4,950
13	Land rent	For 6 months	0.50	45,000	22,500
14	Management Charges	For 6 months	0.50	2,400	1,200
15	Average weighted land tax	Rs/acre/annum	1.00	200	200
16	Total cost of cultivation	Rs/acre	-		83,734
17	Value of wheat bhoosa	Rs/acre	300.00	30.5	9,150
18	Net cultivation cost (items 16-17)	Rs/acre	-		74,584
19	Yield	40 kg/acre	-		30.5
20	Cost of production at farm level	Rs/40 kgs			2,445
21	Marketing cost	Rs/40 kgs	-		50
22	Cost of production at marketplace	Rs/40 kgs			2,495.39

Notes:

*: Interest rate (KIBOR@15%) plus 5%

Annex-XII

Cost of Production Estimates for Wheat 2022-23 (Resourceful Farmer)

(PM Task Force on Agriculture)

S #	Operations/Inputs	Unit	Avg No. of Ops/ Units/Acre	2022-23 crop	
				Cost/Unit	Cost/Acre
1	2		3		5=3 * 4
1	Land preparation:				
	1.1 Rotavator OR disc plough	No. of operation/acre	1.00	5,000	5,000
	1.2 Ploughing & Planking	No. of operation/acre	2.00	2,000	4,000
	1.3 Laser Leveling	No. of operation/acre	0.25	1,600	400
2	Seed and sowing operations:				
	2.1 Seed used	Kg/acre	40.00	100	4,000
	2.2 Labour for seed broadcasting	Person-hours/acre	1.00	-	-
	2.3 Rabi drill sowing	No. of operation/acre	1.00	3,000	3,000
	2.4 Planking after broadcasting	No. of operation/acre	0.50	-	-
3	Bund making:				
	3.1 Manual	Person-hours	0.50	-	-
	3.2 tractor	Hours	0.50	2,000	1,000
4	Plant protection:				
	4.1 Weedicides & application	No. & application	1.00	2,000	2,000
	4.2 Spray	No. & application	1.00	2,000	2,000
5	Irrigation: (Nos)				
	5.1 Canal	No. of Irrigation			350
	5.2 Tubewell Irrigation	Hours of Irrigation	3.00	2,500	7,500
	5.3 Mixed	No. of Irrigation	0.00	-	-
6	Labour for irrigation and water course cleaning	Person-days/acre	2.00	800	1,600
7	Farm Yard Manure & application	No. of trolley	0.00	-	-
8	Fertilizers:				
	8.1 DAP	Bags/acre	1.50	15,000	22,500
	8.2 Urea	Bags/acre	1.50	2,400	3,600
	8.3 Potash	Bags/acre	0.50	12,100	6,050
	8.5 Transport and application	Rs/acre	3.50	110	385
10	Cost of Traded inputs	Rs/acre			63,035
11	Mark up on investment on item 1 to 8 minus 5(1)	For 6 months			6,304
12	Harvesting & threshing (combine charges)	40 kg/acre	1.00	5,000	5,000
13	Land rent	For 6 months	0.50	50,000	25,000
14	Management Charges (farm manager)	For 6 months	0.50	2,400	1,200
15	Average weighted land tax	Rs/acre/annum	1.00	200	200
16	Total cost of cultivation	Rs/per acre	-		101,089
17	Value of wheat bhoosa	Rs/acre	300.00	20	6,000
18					
19	Net cultivation cost (item 16-17)	Rs/acre	-		95,089
20	Yield	40 kg/acre	-		40
21	Cost of production at farm level	Rs/40 kgs			2,377
22	Marketing cost	Rs/40 kgs	-		50
23	Cost of production at market/procurement centre	Rs/40 kgs	-		2,427.21

*: Interest rate (KIBOR@15)+5 percent.

**ECONOMICS OF WHEAT AND COMPETING CROPS AT
PRICES REALIZED BY THE GROWERS: 2021-22 CROPS**

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		
									Rupee of purchased inputs	Crop day	Acre inch of water used
	Days	Acre inchesRupees per acre.....					RatioRupees.....		
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											
Wheat	150	12	59081	20017	75069	55052	15988	1.27	3.8	500	6256
Seed Cotton	210	22	84502	30416	119120	88704	34618	1.41	3.9	567	5415
Basmati paddy	180	58	69585	37172	75425	38253	5840	1.08	2.0	419	1300
IRRI paddy	180	62	72721	33748	79700	45952	6979	1.10	2.4	443	1285
Sunflower (spring)	120	22	62272	24678	125454	100776	63182	2.01	5.1	1045	5702
Canola	180	13	48426	12530	100874	88344	52447	2.08	8.1	560	7760
Seed cotton + wheat	360	34	143583	50433	194189	143756	50606	1.35	3.9	539	5711
Seed cotton + sunflower	390	44	146774	55094	244574	189480	97800	1.67	4.4	627	5559
Basmati paddy+wheat	330	70	128665	57189	150494	93305	21829	1.17	2.6	456	2150
Basmati paddy+sunflower	360	80	131856	61850	200879	139029	69023	1.52	3.2	558	2511
IRRI paddy + wheat	330	74	131802	53765	154769	101004	22967	1.17	2.9	469	2091
IRRI paddy+sunflower	360	84	134993	58426	205154	146728	70161	1.52	3.5	570	2442
Sugarcane	394	48	133068	48100	165960	117860	32892	1.25	3.5	421	3458
Sindh											
Wheat	150	12	63478	21439	81185	59746	17707	1.28	3.8	541	6765
Seed cotton	210	18	88942	29911	127561	97650	38619	1.43	4.3	607	7087
IRRI paddy	180	56	67854	24881	84245	59364	16391	1.24	3.4	468	1504
Sunflower (spring)	120	22	49629	18308	60789	42481	11160	1.22	3.3	507	2763
Canola	180	13	47322	11910	72263	60353	24941	1.53	6.1	401	5559
Seed cotton + wheat	360	30	152420	51350	208746	157396	56326	1.37	4.1	580	6958
Seed cotton+sunflower	390	40	138571	48218	188350	140131	49779	1.36	3.9	483	4709
IRRI paddy + wheat	360	68	131332	46320	165430	119110	34098	1.26	3.6	460	2433
IRRI paddy+sunflower	360	78	117483	43189	145034	101845	27551	1.23	3.4	403	1859
Sugarcane	488	71	127429	43442	162338	118896	34909	1.27	3.7	333	2286

Notes for Annex - XIII:

1. The economic analysis presented in the above exercise is based on the input-output prices applicable for 2021-22 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, 2021-22 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 2021-22 crops. To incorporate the escalations in input prices, which occurred during the growing period of 2021-22 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 Wheat i.e Rs 2,200 per 40 kgs, as maintained by the Punjab and Sindh for 2021-22 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. 2,015 and Rs. 1,514 per 40 kgs, respectively. While, the average price of IRRI paddy in Sindh is reported at Rs. 1,519 per 40 kgs.
 - 4.3 The wholesale market prices of seed cotton during the post-harvest months of 2021-22 in the main producer area markets have averaged at Rs. 5,996 per 40 kgs in the Punjab and Rs. 5,797 in Sindh.
 - 4.4 The average market price of Sunflower and Canola crops has been reported hovering around Rs 4,500/40 kgs during 2021-22.
 - 4.5 The average market prices of sugarcane as realized by the farmers are taken for the analysis i.e. Rs. 250 per 40 kgs in the Punjab and Rs. 260 per 40 kgs in Sindh. However, the prices notified by the provincial governments were lower i.e Rs. 225 and Rs. 250, 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 19.5 per 40 kgs in Punjab and Sindh for sugarcane, Rs 40 for seed cotton in Punjab and Sindh, Rs 60 for rice paddy in Punjab and Sindh, and for wheat and oilseeds, Rs 40 in Punjab and Rs 45 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 inputs = Gross income divided by cost of purchased
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.

**ECONOMIC EFFICIENCY OF RESOURCE USE IN WHEAT PRODUCTION IN PUNJAB
POLICY ANALYSIS MATRIX (PAM)**

Based on Import parity prices and Export Parity Prices

Description	Revenues	Traded cost	Domest Factor cost	Profits
Import Parity Prices	----- Rupees per acre -----			
2017-18				
Private Prices	43,500	16,615	25,399	1,487
Social Prices	42,423	15,650	25,494	1,278
Transfers	1,077	965	-96	208
2018-19				
Private Prices	46,500	18,355	26,850	1,295
Social Prices	53,433	17,117	26,564	9,752
Transfers	-6,933	1,238	286	-8,456
2019-20				
Private Prices	50,919	21,328	27,287	2,303
Social Prices	67,637	19,613	27,180	20,843
Transfers	-16,718	1,715	107	-18,540
2020-21				
Private Prices	60,400	23,619	30,019	6,762
Social Prices	66,728	21,566	25,854	19,308
Transfers	-6,328	2,053	4,165	-12,546
2021-22				
Private Prices	74,980	26,915	32,451	15,614
Social Prices	140,560	24,383	28,285	87,892
Transfers	-65,580	2,532	4,166	-72,278
Export Parity Prices				
2017-18				
Private Prices	43,500	16,615	25,399	1,487
Social Prices	29,073	15,650	25,494	-12,072
Transfers	14,427	965	-96	13,558
2018-19				
Private Prices	46,500	18,355	26,850	1,295
Social Prices	36,333	17,117	26,564	-7,348
Transfers	10,167	1,238	286	8,644
2019-20				
Private Prices	50,919	21,328	27,287	2,303
Social Prices	45,389	19,613	27,180	-1,405
Transfers	5,530	1,715	107	3,708
2020-21				
Private Prices	60,400	23,619	30,019	6,762
Social Prices	45,532	21,566	25,854	-1,888
Transfers	14,868	2,053	4,165	8,650
2021-22				
Private Prices	74,980	26,915	32,451	15,614
Social Prices	91,720	24,383	28,285	39,052
Transfers	-16,740	2,532	4,166	-23,438

Note: The calculation are based on the analysis of data from the respective cost of production and Import Parity Prices estimates made in the previous price policy analysis reports of API, Islamabad

**ECONOMIC EFFICIENCY OF RESOURCE USE IN WHEAT PRODUCTION IN SINDH
POLICY ANALYSIS MATRIX (PAM)**

Based on Import parity prices and Export Parity Prices

Description	Revenues	Traded cost	Domestic Factor cost	Profits
Import Parity Prices	----- Rupees per acre -----			
2017-18				
Private Prices	40,500	17,936	20,133	2,432
Social Prices	36,050	16,490	20,172	-612
Transfers	4,450	1,445	-39	3,044
2018-19				
Private Prices	44,813	20,100	22,531	2,182
Social Prices	48,014	18,392	22,823	6,800
Transfers	-3,202	1,708	-292	-4,618
2019-20				
Private Prices	53,185	22,733	26,238	4,214
Social Prices	60,489	20,693	26,298	13,498
Transfers	-7,304	2,039	-60	-9,284
2020-21				
Private Prices	63,900	25,737	28,855	9,308
Social Prices	60,329	23,070	29,032	8,226
Transfers	3,572	2,666	-177	1,082
2021-22				
Private Prices	80,500	29,543	33,229	17,728
Social Prices	130,665	26,343	33,533	70,789
Transfers	-50,165	3,200	-304	-53,061
Export Parity Prices				
2017-18				
Private Prices	40,500	17,936	20,133	2,432
Social Prices	22,700	16,490	20,172	-13,962
Transfers	17,800	1,445	-39	16,394
2018-19				
Private Prices	44,813	20,100	22,531	2,182
Social Prices	30,558	18,392	22,823	-10,657
Transfers	14,254	1,708	-292	12,838
2019-20				
Private Prices	53,185	22,733	26,238	4,214
Social Prices	39,407	20,693	26,298	-7,584
Transfers	13,778	2,039	-60	11,798
2020-21				
Private Prices	63,900	25,737	28,855	9,308
Social Prices	39,802	23,070	29,032	-12,300
Transfers	24,098	2,666	-177	21,609
2021-22				
Private Prices	80,500	29,543	33,229	17,728
Social Prices	90,723	26,343	33,533	30,847
Transfers	-10,223	3,200	-304	-13,118

Note: The calculation are based on the analysis of data from the respective cost of production and Import Parity Prices estimates made in the previous price policy analysis reports of API, Islamabad

Impact of Rise in Support Price of Wheat on Average Household Expenditure

Proposed support price	Expenditure on wheat at average per capita @ 115kgs per year **		Rise in annual per capita expenditure	
	Per Person	Per household	Per Person	Per household
	Rs per 40 kgs		--- Rupees per year ----	
*2,200	6,325	39,468	-	-
2,500	7,187	44,847	862	5,379
3,000	8,625	53,820	2,300	14,352
3,500	10,062	62,787	3,737	23,319
4,000	11,500	71,760	5,175	32,292

Sources: 1. Pakistan Bureau of Statistics (PBS), Islamabad.

*Existing Support price for 2021-22 wheat crop.

**HH Size 6.24 as in HIES 2018-19

@ As Recommended by M/o NFS&R

Note: Impact of wheat price has been calculated by assuming incremental charges of Rs.500 /- per 40 kg of August ,2022.

**YIELD PER HECTARE OF MAJOR WHEAT PRODUCING COUNTRIES IN THE
WORLD:2020 CROP**

S.No.	Country	Yield per Hactare in Kgs	S.No.	Country	Yield per Hactare in Kgs
1	New Zealand	9,933.21	34	Japan	4,465.19
2	Belgium	8,946.27	35	Albania	4,327.10
3	Netherlands	8,555.96	36	Spain	4,253.24
4	Denmark	8,098.71	37	South Africa	4,137.11
5	Germany	7,819.47	38	Bulgaria	4,039.34
6	Ireland	7,765.91	39	Belarus	3,941.26
7	Zambia	7,368.02	40	Italy	3,924.79
8	Sweden	7,156.09	41	Ukraine	3,795.01
9	United Kingdom	6,963.23	42	Norway	3,787.50
10	Kuwait	6,800.00	43	North Macedonia	3,526.57
11	France	6,680.25	44	Canada	3,512.05
12	Egypt	6,568.22	45	Finland	3,453.82
13	Saudi Arabia	6,375.52	46	India	3,431.13
14	Switzerland	6,221.43	47	Lebanon	3,414.63
15	Czechia	6,138.91	48	United States of America	3,341.51
16	Luxembourg	6,068.73	49	Uruguay	3,268.63
17	Chile	6,003.77	50	Republic of Korea	3,251.34
18	Namibia	6,000.00	51	Tajikistan	3,152.01
19	Austria	5,923.37	52	Bangladesh	3,097.03
20	Croatia	5,868.03	53	Azerbaijan	3,090.79
21	Slovenia	5,796.55	54	Nepal	3,088.73
22	China, mainland	5,742.09	55	Greece	3,077.30
23	Slovakia	5,511.34	56	Venezuela (Bolivarian Republic of)	3,067.26
24	Hungary	5,468.04	57	Montenegro	3,065.53
25	Lithuania	5,393.06	58	Kenya	3,060.55
26	Latvia	5,338.42	59	Ethiopia	2,995.38
27	Mexico	5,321.19	60	Russian Federation	2,975.87
28	Mali	5,303.43	61	Turkey	2,964.73
29	Poland	5,238.76	62	Romania	2,960.32
30	Estonia	5,001.90	63	Argentina	2,938.70
31	Serbia	4,944.70	64	Iraq	2,910.48
32	Bosnia and Herzegovina	4,602.85	65	Pakistan	2,867.51
33	Uzbekistan	4,555.57		World Average	3,474.44

Source:FAO Production Year Book 2020

LIST OF WHEAT VARIETIES RELEASED ACROSS PAKISTAN

Wheat Coordination Division, PARC, Islamabad.			
S. No.	Varieties Name	Year of Release	Yield Potential (Kgs/ha)
1	AARI-11	2010	6,000-6,500
2	Tijaban-2010	2010	5,500-6,500
3	NIA-Amber	2010	6,000
4	NIA-Sunehri	2010	6,500
5	Janbaz	2010	5,500-6,000
6	Atta-Habib	2010	6,000-6,500
7	Amin-2008	2010	6,000-6,500
8	Siren	2010	6,000-6,500
9	KT-2009	2010	5,000-5,500
10	Kohat-2010	2010	5,000
11	Millat-11	2011	6,000-6,500
12	AARI-11	2011	6,000-6,500
13	Punjab-11	2011	6,500-7,000
14	NARC-2011	2011	6,000-6,500
15	AAS-11	2011	6,000-6,500
16	Dharabi-11	2011	5,500-6,000
17	Pakistan 13	2013	6,000
18	Shahkar-CCRI	2013	5,500
19	Pirabak-2013	2013	6,000
20	NIFA Lama	2013	5,000
21	Benazir 13	2013	7,500-8,000
22	Galaxy	2013	6,500-7,000

Source: Pakistan Agriculture Research Council, Islamabad

WHEAT VARIETIES DEVELOPED BY WHEAT PROGRAM- NARC

S. No.	Variety	Yield Potential (Kg/ha)	Salient features	Adaptability	Recommended by
1	Markaz - 2019	6,800	<ul style="list-style-type: none"> Resistance to yellow rust, leaf rust and stem rust race Ug99. High protein content (15 %) and test weight (78.7 kg/hl) Medium maturing wheat variety 	Punjab Rainfed	Punjab Seed Council - 2019
2	Borlaug - 2016	7,000	<ul style="list-style-type: none"> APR to all three rusts particularly to stem rust race Ug99. Better adaptability for late sowing. Medium maturing wheat variety 	Punjab Irrigated area	Punjab Seed Council - 2016
3	Zincol - 2016	6,500	<ul style="list-style-type: none"> High Zn content (35 ppm) in grain Resistance to yellow rust, leaf 	Punjab & KP - Irrigated area	Punjab Seed Council, 2016 KP Seed Council -

			<ul style="list-style-type: none"> rust and stem rust race Ug99. Better adaptability for late sowing Protein content – 12% Medium maturing wheat variety. 		2016
4	Pakistan - 2013	7,000	<ul style="list-style-type: none"> Resistant to leaf rust, yellow rust & stem rust race of Ug99 Protein content (12%) Medium maturing wheat variety 	Punjab Rainfed	Punjab Seed Council, 2013
5	NARC-2011	6,500	<ul style="list-style-type: none"> Resistance to yellow, stem and leaf rust and stem rust race Ug99. Better adaptability to Southern Punjab and Sind province. Protein content (12.31%) Medium maturing wheat variety. 	Punjab Irrigated area	Punjab Seed Council 2011
6	NARC-2009	5,200	<ul style="list-style-type: none"> Resistance to yellow and leaf rust Protein content (2.28%) Medium maturing wheat variety 	Punjab Rainfed	Punjab Seed Council 2009

Source: National Agriculture Research Council, Islamabad

WHEAT RESEARCH INSTITUTE, FAISALABAD

Sr. No.	Varieties	Year of Release	Sowing Time	Yield Potential (Maund/Acre)
1	Akbar 2019	2019	1st November-10th December	76
2	Anaj 2017	2017	1st November-10th December	76
3	Ujala 2016	2016	1st November-20th December	68
4	Galaxy 2013	2013	1st November-10th December	80
5	AARI 2011	2011	1st November-10th December	67
6	Punjab 2011	2011	1st November-10th December	70
7	Millat 2011	2011	1st November-10th December	64
8	Lasani 2008	2008	1st November-10th December	62
9	FSD. 08	2008	1st November-10th December	68

Source: Wheat Research Institute, Faisalabad

BARANI AGRICULTURAL RESEARCH INSTITUTE, CHAKWAL

Sr. No.	Varieties	Year of Release	Sowing Time	Yield Potential (Maund/Acre)	Recommended Areas	Salient Features
1	Chakwal-50	2008	20th October-20th November	105.13	Barani areas of Punjab	<ul style="list-style-type: none"> • Disease Resistant • High Tillering • High Yielding • Lodging Resistant • Excellent Chapati Making Quality
2	Bars-09	2009	20th October-20th November	48.53	Barani areas of Punjab	<ul style="list-style-type: none"> • Disease Tolerant • High Yielding
3	Dharabi-11	2011	20th October-20th November	60.32	Barani areas of Punjab	<ul style="list-style-type: none"> • Tall variety • Ug-99 Race Resistant • High Yielding • White Grain
4	Ehsan 16	2016	20th October-20th November	74.94	Barani areas of Punjab	<ul style="list-style-type: none"> • Disease Tolerant • High Yielding • Drought Tolerant
5	Fateh Jang 16	2016	20th October-20th November	75.12	Barani areas of Punjab	<ul style="list-style-type: none"> • Disease Tolerant • High Yielding • Drought Tolerant • Reddish Grain
6	Barani-17	2017	20th October-20th November	75.35	Barani areas of Punjab	<ul style="list-style-type: none"> • Disease Tolerant • High Yielding • Drought Tolerant • High Protein

Source: Barani Agricultural Research Institute, Chakwal

CONVERSION FACTORS**Weights**

One pound (16. Oz)	=	0.45359 Kgs	=	0.48609 Seer.
One hundred weight(112 lbs)	=	50.80208 Kgs	=	1.361 Maunds.
One ton (2240 lbs)	=	1.01605 M.tons	=	27.22 Maunds.
			=	5.60/5.71 bales
			=	of jute/cotton
One tonne	=	0.984 Tons	=	26.792 Maunds.
Cotton bale(375 Lbs)	=	170.09 Kgs	=	4.5571 Maunds
			=	0.1674 Long ton
1 Bushel per acre	=	67.253 Kgs. per hectare		
1 Bushel	=	0.73 Maund.		
	=	29.17 Seers.		
	=	60.00 Lbs.		

Length

One inch	=	25.3999 Millimeters
One foot (12 inches)	=	0.3048 Meter
One yard (3 feet)	=	0.9144 Meter
One mile (1760 yards)	=	1.60934 Kilometers

Square Measures

One square yard	=	Nine Square Feet	=	0.83613 Square Meter
One acre	=	4840 Square Yards	=	0.40468 Hectares
One square mile	=	640 Acres	=	258.99842 Hectare
One square kilometer	=		=	0.3861 Square Mile
One Hectare	=		=	2.4711 Acres
One Cubic Meter	=		=	2.4711 Acres/ (35.3147 Cubic Feet)

Liquid

One imperial gallon	=	4.5461 liters or 1.2 U.S gallons
One U.S. gallon	=	3.7853 liters.

GENERAL CONVERSIONS

<u>Divide</u>	<u>By Factor</u>	<u>To obtain</u>
Acres	2.4711	Hectares
Long ton	0.9842	M.tons
Cotton bales (375 lbs)	5.973	Long tons
Cotton bales (375 lbs)	5.879	M.tons
Maunds	26.79	M.tons
Price per 40 kgs.	1.0716	Price/maund
Yield kgs per hect.	92.2313	Yield maunds/acre.
Rice	0.666	Paddy
Cotton Lint	0.333	Seed Cotton

N.B. In case of vice-versa multiply with the factor.

Annex-VII-B

IMPORT PARITY PRICES OF WHEAT ON THE BASIS OF ACUTAL IMPORT BY TCP

S. No	Item	Imports by TCP
		2022-23 (Jul-Aug)
		-----US \$ per tonne-----
1	Average c&f (Karachi) price in US \$	407
2	Exchange rate as on Sept 30, 2022	228
		-----Rs. per tonne-----
3	Average c&f (Karachi) price	92,908
4	Marine insurance charges @0.05% of C & F cost	46
5	Lc opening charges @0.02% of c&f cost.	19
6	Stevedoring	1,400
7	Provision for unforeseen losses @ 0.5 of C&F cost	465
8	Survey, Lab Testing Charges, Weightment, wharfage DPP charges & clearing and forwarding charges	43
9	TCP commission @ 0.2 % of c&f cost	1,858
10	KIBOR @15 % for 3 months for 30 days	1,161
11	Landed cost (item 3 to10) at Karachi	97,900
12	Transport cost from Karachi to Multan	10,980
13	Expences from procurement center to Multan	1,000
14	Import parity price at procurement center level	107,880
15	Import parity prices of wheat	-----Rs per 40kgs-----

	i) If consumed at Multan	4,315
	ii) If consumed at Karachi	3,919

Sources:

- i) For c&f Karachi price, TCP
- ii) For, incidental and transport charges, TCP Karachi
- iii) For expenses from procurement centre to Multan: PASSCO, Lahore.