Parameters for Performance Review of Commodity

PADDY (BASMATI) – PUSA 1121

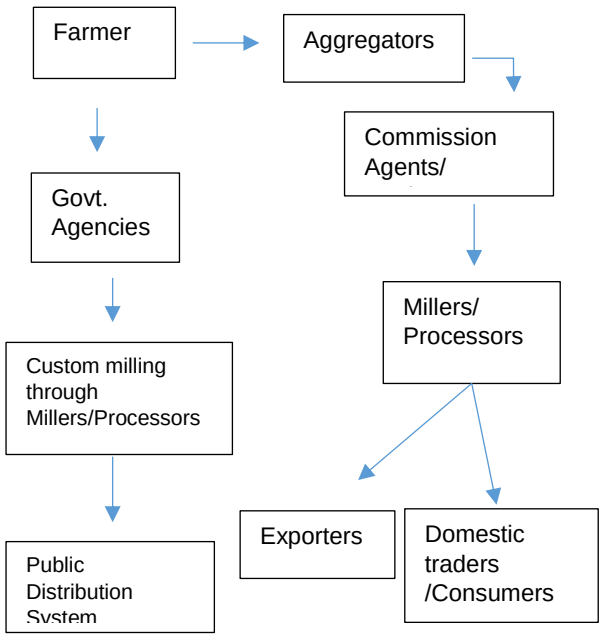
1. Background

a. Brief about the commodity such as sample picture, lifecycle and various varieties/grade of the commodity found in India

The word Basmati is derived from the Hindi word 'Bas' means aroma and 'mati' means 'full of'. The Paddy (Basmati) is one of the important Paddy crop in India and believed to be originated from India. *Pusa Basmati 1121 (*PB-1121) is the largest cultivated and unique variety. It is a landmark Basmati rice variety. It possesses extra-long slender milled grains and pleasant aroma. In India, Basmati rice is grown where precise climatic conditions, soil fertility, irrigation water and temperature exist. This occurs mainly in Indo-Gangetic plains, particularly, north-western region. Basmati is mainly a Kharif Crop. India is the largest producer, consumer and exporter of Pusa Basmati -1121. Broadly, India's share in global rice production is near 20%. India accounts for around 70% of Basmati rice production while balance about 30% production is from Pakistan. As per market estimates, Basmati Rice Production is nearly 5% of the total Rice production in India. In terms of Basmati paddy, the major variety produced in India is PUSA 1121 which is more than 65 percent of the total Basmati production.

Crop Cycle - Paddy (India)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kharif Paddy												
Rabi Paddy												
Summer Paddy												
	Sowing			Harvesting								

Value Chain of the Commodity



Major Varieties /Grade

Major Varieties

PB 1121, PB 1509, PB 1718

NCDEX: Important Quality Parameters

Moisture	Basis 13%, Max 14% Acceptable up to 14% maximum with moisture adjusted weight
Foreign Matter	1% max. Out of this Inorganic foreign matter 0.25% (Max) & Impurities of animal origin 0.10% (Max)
Damaged, Discolored, Weevil led & Broken Grains (%)	4% max (Broken grains should not be more than 1% and weevilled grains should not be more than 0.5%)
Immature	Max 4%
Green Grains	Max 5%
Admixture of lower class	Max 5%
Empty shell	Max 2%
Hulling recovery	Min 72%

	Average Kernel length of Hulled Rice before cooking	Min 8.30 mm
	Paddy shall be in sound merchantable condition, dry, clean, wholesome, uniform in colour and size of grains and free from moulds, live weevils, obnoxious smell, Argemone mexicana, Lathyrus sativus (Khesari) and admixture of deleterious substances	

Table: Reference Years for Commodities

Sl. No.	A	B	C
Crop Season	**Kharif**	**Kharif (Long Duration crop)**	**Rabi**
Crops	Paddy, Maize, Bajra, Moong, Soybean, Guar seed, Kapas, Sesame Seed	Castor seed and Turmeric	Wheat, Barley, Chana, RM Seed, Coriander, Jeera
Relevant Processed commodities	Guar gum, Soybean meal, Soy oil, Cotton, Cotton seed Oil cake, Gur, CPO	Castor Oil	-
Sowing Time	July onwards	July onwards	October onwards
Harvesting Time	Oct onwards	Jan onwards	March onwards
Reference Year Financial Year 2022-23 (Apr-Mar)			
Corresponding Years			
Production Year (PY)	2022-23 (July-Sept)	2021-22 (July-June)	2021-22 (July-June)
Marketing Year (MY)	2022-23(Oct-Sept)	2022-23 (Jan/Feb-Dec/Jan)	2022-23 (Mar/Apr - Feb/Mar)
Calendar Year (CY)	2022 (Jan-Dec)	2022 (Jan-Dec)	2022 (Jan-Dec)
Relationship b/w Various Years	Current Financial Year = Current Production Year = Current Marketing Year = Calendar Year	Current Financial Year = Previous Production Year = Current Marketing Year = Current Calendar Year	Current Financial Year = Previous Production Year = Current Marketing Year = Current Calendar Year
Example	FY 2022-23= PY 2022-23= MY 2022-23= CY 2022	FY 2022-23= PY 2021-22 = MY 2022-23= CY 2022	FY 2022-23= PY 2021-22 = MY 2022-23= CY 2022

Note: Coffee is a plantation crop; hence, it is not classified under either Kharif or Rabi season in the above table.

Explanatory Notes:

- India is a vast country and various crops are sown and harvested at different point of time. However, two major crop seasons, are there i.e. Kharif & Rabi. Apart from it, Zaid/Summer season is also there.

- Crop seasons are classified based upon sowing time. Normally Kharif season sowing starts from mid-June/July and new crop arrivals begin from Oct/Nov. However, early/late sowing/harvesting also takes place. Rabi season sowing usually takes place mainly from October/November and harvesting starts from March/April. Early/late sowing/harvesting also takes place. Summer crops/Zaid crops are short duration crops mainly sown during January-March and harvested during April-June.

- "Production Year" is considered as "July to June". With the start of monsoon rains during June/July the sowing of Kharif season starts and they are harvested during Sept/Oct. From Oct onwards the sowing of Rabi season crops starts and harvesting usually takes place during March/April. Thus, a single production cycle completes between July-Sept period covering Kharif, Rabi and Zaid crops. Thus production year remains same for all season crops and the period corresponds to July-Sept.

- "Marketing Year" for each crops starts from beginning of the harvest time i.e. from start of new crop produce arrivals in the market. Thus, for Kharif crops Marketing Year is generally considered as "October to September", while for Rabi crops Marketing Year is considered as "April to March". However, Marketing Year may vary slightly for some of the crops depending upon early/late maturity/harvesting.

- For processed commodities, their production starts after the start of new season crop arrivals of their underlying crop.

b. Commodity fundamentals and balance sheet as per the following format (to be prepared based on publicly available information on best effort basis):

Table - Fundamentals & Balance sheet (quantity)

The published data available is for Rice only. As per rough estimates, Paddy to Rice conversion percentage remains around 67% which means that after milling of 100 kg of Paddy around 67 kg of Rice is obtained.

All the figures shown in given Tables are for Rice.

(In Lakh Tonnes)

Global Scenario	Previous Year (2021-22)	Current Year (2022-23)
Opening Stocks	1873.00	1820.00
Production	5139.00	5094.00
Imports	545.00	543.00
Total Supply	7556.00	7457.00
Exports	568.00	557.00
Domestic Consumption	5168.00	5187.00
Closing Stocks	1820.00	1713.70

Source: USDA; (April 2023)
The above figures are inclusive of all varieties of Rice. Variety wise production figures are not available.

(In Lakh Tonnes)

Indian Scenario	Previous FY (2021-22)	Current FY (2022-23)
Opening Stocks	370.00	340.00
Production	1294.71	1320.00
Imports	-	-
Total Supply	1664.71	1660.00
Exports	220.25	225.00
Domestic Consumption	1104.46	1110.00
Closing Stocks	1324.71	1335.00

Source: USDA; (Apr 2023); above figures are inclusive of all varieties of Rice. Variety wise production figures are not available. There is no import of Rice in India.

Please refer to Table entitled "Reference Years for Commodities" to know type of years corresponding to financial year.

(In Lakh Tonnes)

Rank	Top 10 Major Producing Countries			Top 10 Major Consuming Countries		
	Country	Previous FY (2021-22)	Current FY (2022-23)	Country	Previous FY (2021-22)	Current FY (2022-23)
1	China	1489.90	1459.46	China	1564.00	1549.00
2	India	1294.71	1320.00	India	1104.00	1110.00
3	Bangladesh	358.50	363.50	Bangladesh	365.00	376.00
4	Indonesia	344.00	340.00	Indonesia	353.00	353.00
5	Vietnam	267.69	270.00	Vietnam	215.00	215.00
6	Thailand	198.78	202.00	Philippines	154.00	158.00
7	Philippines	125.40	124.11	Thailand	128.00	128.00
8	Burma	123.52	125.00	Burma	104.00	103.00
9	Pakistan	93.23	66.00	Japan	82.00	82.00
10	Japan	76.36	74.80	Nigeria	74.00	75.00
	Others	766.43	749.32	Others	1026.00	1039.00
	World	5138.52	5094.19	World	5168.00	5187.00

Source: USDA (April 2023); the above figures are inclusive of all varieties of Rice. Variety wise production figures are not available;

(In Lakh Tonnes)

Rank	Top 10 Major Exporting Countries			Top 10 Major Importing Countries		
	Country	Previous FY (2021-22)	Current FY (2022-23)	Country	Previous FY (2021-22)	Current FY (2022-23)
1	India	220.25	225.00	China	59.49	50.00
2	Thailand	76.82	85.00	Philippines	35.50	36.00
3	Vietnam	70.54	71.00	Nigeria	24.50	23.00
4	Pakistan	48.17	38.00	European Union	24.32	26.50
5	United States	26.09	19.37	Iraq	17.21	19.00
6	Burma	23.65	24.00	Cote d'Ivoire	16.65	15.50
7	China	20.79	21.00	Senegal	15.00	11.00
8	Cambodia	17.00	17.00	Vietnam	15.00	11.00
9	Brazil	13.92	11.00	Bangladesh	13.00	13.50
10	Uruguay	9.80	8.70	Saudi Arabia	13.00	13.00
	Others	40.65	36.86	Others	310.86	324.62
	World	567.68	556.93	World	544.53	543.12

Source: USDA (April 2023); above figures are inclusive of all varieties of Rice. Variety wise production figures are not available

Major State-wise Production

(In Lakh Tonnes)

Top 10 Major producing states in India			
Rank	States	Previous FY (2020-21)	Current FY (2021-22)
1	Uttar Pradesh	154.30	151.83
2	Punjab	127.84	128.85
3	West Bengal	118.55	122.05
4	Odisha	76.57	81.54
5	Chhattisgarh	71.61	80.22
6	Telangana	54.40	78.34
7	Bihar	66.11	75.72
8	Tamil Nadu	61.37	70.51
9	Andhra Pradesh	42.11	43.26
10	Assam	41.43	35.38
	Others	429.39	426.99
	All India	1243.68	1294.71

Source: Ministry of Agriculture; above figures are inclusive of all varieties of Rice. Variety wise production figures are not available.
State wise data after Year 2021-22 is not available in public domain.
Please refer to Table entitled “Reference Years for Commodities” to know type of years corresponding to financial year.

c. Major changes in the polices governing trade in the spot markets of the commodity (FY 2022-23)

8-Sep-22	Centre slaps export duty of 20% on non-basmati rice The Centre has decided to impose an export duty of 20 per cent on non-basmati rice (excluding parboiled) from September 9 amidst concerns over domestic price rise and a possible decline in rice production in 2022-23 due to deficient monsoon rains. The export levy of 20 per cent has been imposed on rice in husk (paddy or rough), husked (brown) rice, and semi-milled or wholly milled rice, whether or not polished or glazed (other than parboiled rice and basmati rice), according to a notification issued by the Revenue Department on Thursday. “The notification will come into force from September 9, 2022
30-Sep-22	Govt allows export of broken rice shipments in transit till Oct 15 Broken rice in transit with certain conditions will now be allowed for exports till October 15, a new notification by the Directorate General of Foreign Trade said. On September 9, the government banned the export of broken rice with immediate effect. The export policy for the commodity was revised from “free” to “prohibited”.
12-Oct-22	India permits duty-free exports of 3.97 lakh tonnes fully broken rice The Indian government has decided to permit duty-free exports of fully broken rice consignments for which letters of credit (LCs) were opened before September 8, when it banned its shipments. The measure follows representations from exporters and traders. In a notification issued late on Wednesday evening, the Directorate-General of Foreign Trade said 3.97 lakh tonnes (lt) of fully broken rice will be allowed for exports till the end of the current fiscal. Exporters, in particular, led by The Rice Exporters Association had written to the Commerce Ministry to allow nearly four lt of fully broken rice for which LCs had been opened but were stranded at ports or during transit.
29-Nov-22	Govt lifts ban on exports of organic non-basmati rice The government on November 29, 2022 lifted the ban on exports of organic non-basmati rice, including broken rice, a move which would help in promoting the outbound shipments of the commodity. The government had, in early September, banned the export of broken rice with an aim to increase domestic availability. This followed a 20 per cent duty on the export of non-basmati rice aimed at shoring up domestic supplies after prices surged in retail markets.

d. Geo political issues in the commodity and its impact on Indian scenario (FY 2022-23)

Date	Event	Key Details	Key Implications/Impact
-	No major geo-political issue was noted related to rice	NA	NA

NA: Not Applicable

2. Trading related parameter

a. Monthly and Annual traded volume (quantity in appropriate units)
No trading volume during FY 2022-23.

b. Annual traded volume as proportion of total deliverable supply (quantity in appropriate units)

Symbol	Traded volume (MT)	Deliverable supply(MT)	Proportion
PADYPB1121	0	166,000,000	0%

c. Annual traded volume as proportion of total annual production (quantity in appropriate units)

Symbol	Traded volume (MT)	Production(MT)	Proportion
PADYPB1121	0	132,000,000	0%

d. Annual average Open interest as proportion of total production

Symbol	Avg Open Int(MT)	Production(MT)	Proportion
PADYPB1121	0	132,000,000	0.00%

e. Annual average Open interest as proportion of total deliverable supply

Symbol	Avg Open Int(MT)	Deliverable supply(MT)	Proportion
PADYPB1121	0	166,000,000	0.00%

f. Monthly and Annual value of trade (in Rs. Crores)
No trade

g. Monthly and Annual quantity of delivery (in appropriate units)
Nil

h. Monthly and Annual value of delivery (in Rs. Crores)
Nil

i. Monthly and Annual Average Open Interest (OI) (in appropriate units)
No trading volume during FY 2022-23.

j. Annual average volume to open interest ratio

Average of traded volume (MT)	Average of Open Interest (MT)	traded to Open interest
0	0	0%

k. Total number of unique members and clients who have traded during the financial year

Member Count	Client Count
0	0

l. Ratio of open interest by FPOs/farmers/Hedge/VCP positions to total open interest (Annual average as well as maximum daily value)

Annual average of ratio of open interest by FPOs/farmers/Hedge/VCP positions to total open interest

Symbol	VCPs/ Hedger
PADYPB1121	0%

Maximum daily value of ratio of open interest by FPOs/farmers/Hedge/VCP positions to total open interest

Symbol	VCPs/ Hedger
PADYPB1121	0%

It is calculated on the day when commodity has highest open interest during the year.

Commodity wise client categorization is as per category details as provided by the members

m. Number of unique FPOs / farmers and VCPs/hedgers who traded in the financial year
Nil

n. Algorithmic trading as percentage of total trading
Nil

o. Delivery defaults

Number of Instances	0
Quantity involved (MT)	0
Value Involved (Cr)	0

3. Price Movement

a. Comparison, correlation and ratio of standard deviation of Exchange futures price vis-à-vis international futures price (wherever relevant comparable are available).

Correlation			
	Futures	Spot	Int'l Prices
Futures	1	-	-
Spot	0.920751	1	-
Int'l Prices	-0.10055	-0.10216	1

Standard Deviation			
	Futures	Spot	Int'l Prices
Futures	1	1.128752	0.598645
Spot	0.885934	1	0.023002
Int'l Prices			1

b. Comparison, correlation and ratio of standard deviation of Exchange futures price vis-à-vis international spot price (wherever relevant comparable are available) and domestic spot price (exchange polled price).

NA

c. Correlation between exchange futures & domestic spot prices along with ratio of standard deviation.

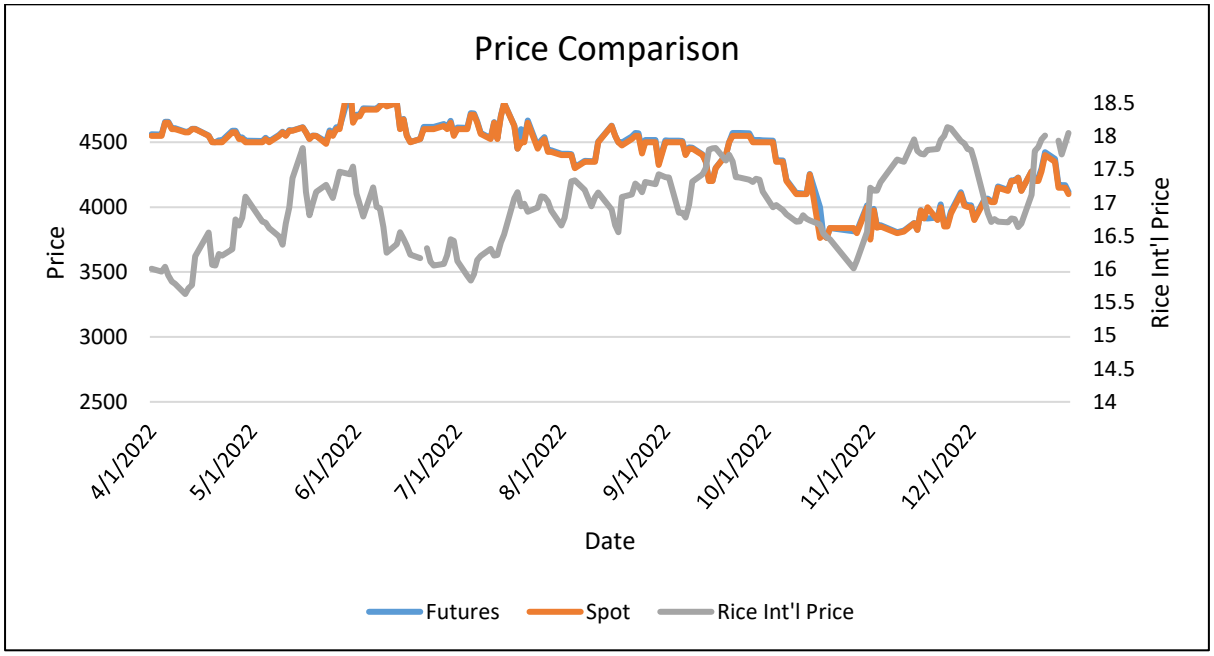
Correlation		
	Futures	*Spot*
Futures	1	0.920751
Spot	0.920751	1

Standard Deviation		
	Futures	*Spot*
Futures	1	1.128752
Spot	0.885934	1

d. Correlation between international futures & international spot prices along with ratio of standard deviation (wherever relevant comparable are available).
NA

e. Comparison of Exchange polled price and mandi price (in case of agricultural commodities) / other relevant price (in case non-agricultural commodities) at basis centre.

Not available



Source: Spot and Future Prices: NCDEX, Int'l futures Price: CBOT

f. Maximum & Minimum value of daily futures price volatility and spot price volatility along with disclosure of methodology adopted for computing the volatility. (Volatility calculated by Standard Deviation of daily returns for the period from 1 April 2022 to 31 March 2023)

	Futures		Spot	
Volatility	Month	Value	Month	Value
Max	Jan	0.029879	Jan	0.039346
Min	Apr	0.008425	Apr	0.00856

g. Number of times the futures contract was in backwardation/contango by more than 4% for the near month contract in the period under review

Contango	0
Backwardation	0

4. Other Parameters

a. Qualitative and quantitative measure for Hedge effectiveness ratio and basis Risk (Volatility of Basis) along with disclosure of methodology adopted for such calculations. (Volatility calculated by Standard Deviation of daily returns for the period from 1 April 2022 to 31 March 2023)

Basis Volatility	11.40439
Hedge Efficiency	96.42%

The methodology for hedge efficiency ratio calculation is appended as Annexure 1.

b. Details about major physical markets of the commodity vis-à-vis market reach in terms of availability of delivery centers (information to be provided state-wise and UT-wise).

State	Major Physical Markets	NCDEX basis and Delivery Centers
Rajasthan	Kota	Basis Center
	Bundi	
	Baran	
	Pilibanga	
	Hanumangarh	
Punjab	Amritsar	
	Tarantaran	
	Gurdaspur	
	Patiala	
	Sangrur	
	Ferozepur	
	Ludhiana	
	Bhatinda	
	Jalandhar	
Haryana	Karnal	
	Sonipat	
	Kaithal	
	Jind	
	Hisar	
	Bhiwani	

c. Details about major physical markets of the commodity and average Open Interest for each month generated from those regions.

Note – The OI for each month is classified based on the Member level. The Average OI is on gross level (Long OI + Short OI), in MT

State	Punjab	Rajasthan
Jun-22	0	0
Sep-22	0	0
Dec-22	0	0
Mar-23	0	0

d. Details, such as number and target audience, of stakeholders' awareness programs carried out by the exchange.

Sr. No.	Program Type	Location	Participants
1	Investor Awareness Program	Kolkata	35
2	Investor Awareness Program	Surat	18
3	Investor Awareness Program	Guna, Madhya Pradesh	30
4	Investor Awareness Program	Anjar, Lutch, Gujarat	38
5	Investor Awareness Program	Raipur, Chhattisgarh	112
6	Investor Awareness Program	Patan, Gujarat	104
7	Investor Awareness Program	Nashik	200
8	Investor Awareness Program	Udaipur	150
9	Investor Awareness Program	Rajkot	100
10	Investor Awareness Program	Hissar	100
11	Investor Awareness Program	Nagpur, Maharashtra	120
12	Investor Awareness Program	Raipur	100
13	Investor Awareness Program	Gwalior, Madhya Pradesh	78
14	Investor Awareness Program	Bhopal , MP	54
15	Investor Awareness Program	Indore, Madhya Pradesh	47
16	Investor Awareness Program	Siliguri, West Bengal	39
17	Investor Awareness Program	Alipurduar, West Bengal	31
18	Investor Awareness Program	Meerut, Uttar Pradesh	30
19	Investor Awareness Program	Bhopal, Madhya Pradesh	44
20	Investor Awareness Program	Indore, Madhya Pradesh	80
21	Investor Awareness Program	Chennai, Tamil Nadu	24
22	Investor Awareness Program	Kanpur, Uttar Pradesh	60
23	Investor Awareness Program	Chindwara, MP	50
24	Investor Awareness Program	Seoni , MP	40

25	Investor Awareness Program	Kolkata	25
26	Investor Awareness Program	Raipur, Chattisgarh	136
27	Investor Awareness Program	Lucknow	177
28	Investor Awareness Program	Rourkela	65
29	Investor Awareness Program	Muzaffarnagar	70
30	Investor Awareness Program	Kochi	86
31	Investor Awareness Program	Bhilai	70
32	Investor Awareness Program	Thalamadla	80
33	Investor Awareness Program	Kolkata	45
34	Investor Awareness Program	Online	30
35	Investor Awareness Program	Online	18
36	Investor Awareness Program	Online	23
37	Investor Awareness Program	Odisha	9
38	Investor Awareness Program	Odisha	15
39	Investor Awareness Program	Karnataka	5
40	Investor Awareness Program	Bihar	18
41	Investor Awareness Program	West Bengal	6
42	Investor Awareness Program	Andhra Pradesh	29
43	Investor Awareness Program	Online	11
44	Investor Awareness Program	Online	7
45	Investor Awareness Program	Online	21
46	Investor Awareness Program	Online	6
47	Investor Awareness Program	Online	9
48	Investor Awareness Program	Online	14
49	Investor Awareness Program	Online	82
50	Investor Awareness Program	Online	28
51	Investor Awareness Program	Online	25
52	Investor Awareness Program	Online	50
53	Investor Awareness Program	Online	30
54	Investor Awareness Program	Online	25
55	Investor Awareness Program	Online	5
56	Investor Awareness Program	Online	10
57	Investor Awareness Program	Online	7
58	Investor Awareness Program	Online	13
59	Investor Awareness Program	Online	16
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61	Investor Awareness Program	Online	53
62	Investor Awareness Program	Online	17
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68	Investor Awareness Program	Online	30

69	Investor Awareness Program	Online	12
70	Investor Awareness Program	Online	6
71	Investor Awareness Program	Online	7
72	Investor Awareness Program	Online	20
73	Investor Awareness Program	Online	50
74	Investor Awareness Program	Online	30
75	Investor Awareness Program	Online	13
76	Investor Awareness Program	Online	10
77	Investor Awareness Program	Online	6
78	Investor Awareness Program	Online	6
79	Investor Awareness Program	Online	8
80	Investor Awareness Program	Online	13
81	Investor Awareness Program	Online	6
82	Investor Awareness Program	Online	25
83	Investor Awareness Program	Online	8
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91	Investor Awareness Program	Online	11
92	Investor Awareness Program	Online	8
93	Investor Awareness Program	Online	8
94	Investor Awareness Program	Online	13
95	Investor Awareness Program	Online	15
96	Investor Awareness Program	Online	25
97	Investor Awareness Program	Online	25
98	Investor Awareness Program	Online	26
99	Investor Awareness Program	Online	18
100	Investor Awareness Program	Online	52
101	Investor Awareness Program	Online	16

e. **Steps taken / to be undertaken to improve hedging effectiveness of the contracts as well as to improve the performance of illiquid contracts**.

- Creating an awareness about the Hedge policy to bona fide hedger
- Awareness Program in Major trading centers as well as remote location
- Attend the National as well as international conferences, Trade meets, seminars etc.
- One to one meeting with market participants and hedgers

5. Any other information to be disclosed as deemed important by the exchange or as suggested by the PAC.

N.A

ANNEXURE I

Qualitative and quantitative measure for Hedge effectiveness ratio

Hedging Efficiency Methodology

Regression analysis is carried out between near month futures returns and NCDEX polled spot prices returns of the FY 2022-23.

The R-Square value of the Regression analysis represents the “Hedging Efficiency”.

Note: -

Date for which spot prices were not available is not used for analysis.

Weekly returns are used for performing Regression Analysis.

The method used to calculate Hedging Efficiency does not consider liquidity risk because of this reason illiquid commodities can have high hedging efficiency.

References:

Ghosh, Ph.D, Nilanjan & Dey, Debojyoti & Moulvi, Nazir & Jain, Niteen & Sinha, Neha & Rachuri, Sarika. (2013). Hedging Efficiency—Measures and Empirical Study.