Parameters for Performance Review of Commodity

CASTOR SEED

1. Background

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

Castor is an important non-edible oilseed, basically a cash crop, cultivated around the world because of the commercial importance of its oil. It is reported to have originated in the tropical belt of both India and Africa.

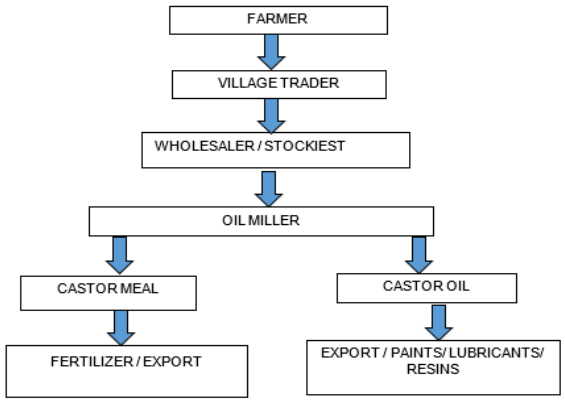
Castor seed is processed to produce oil, with the average recovery rate being 46%. Castor oil is rich in tryglycerides called ricinolein and is the largest vegetable oil exported out of India. Traditionally, Castor oil was primarily used for medicinal purposes and as a general industrial lubricant. At present, Castor oil and its derivatives have applications in the manufacturing of soaps, lubricants, hydraulic and brake fluids, paints, dyes, coatings, inks, cold resistant plastics, waxes and polishes, nylon, pharmaceuticals and perfumes. Castor meal, the by-product of the oil extraction process, is mainly used as organic fertilizer due to its rich protein contains; however, it cannot be used as cattle fodder because of its toxicity (presence of `ricin'). India is the leader in global Castor production and dominates in international Castor oil trade.

Castor is an annual crop. It requires moderately high temperatures with low humidity throughout the growing season to produce maximum yields. Traditionally, Castor is a kharif season crop. Time of sowing depends on the onset of monsoon. Generally, Castor seed planting takes place during July-Aug. Under certain circumstances, it can be sown even during September. Harvesting starts in December or January and extends till April. Gujarat is the largest Castor producing state followed by Andhra Pradesh and Rajasthan.

Crop Cycle (India)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sowing			Harvesting								

Life Cycle:
Value Chain of the Commodity



Major Varieties /Grade

Major Varieties
DCH 519, Gujarat castor-2, GAUC-1, J-1, GCH 7, GCH 6, RHC-1

NCDEX: Quality Parameters for Castor Seed (Small seed)

Oil content	47% basis
Fotri (Husk) and damaged Seeds	3.5% Max
Sand, Silica and Stones	1% Max.
Moisture content	4.5% Basis 5.5 % Maximum with moisture adjusted weight (MAW) of 1:1
Quality Variation	+/-2%

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)

(In Lakh Tonnes)

Global Scenario	Previous FY (2020-21)*	Current FY (2021-22)* (P)
Opening Stocks	NA	NA
Production	21.54	19.56
Imports	NA	NA
Total Supply	NA	NA
Exports	NA	NA
Domestic Consumption	NA	NA
Ending Stocks	NA	NA

Source: Video presentation by Mr. Thomas Mielke Editor, Oil World at Global Castor Conference 2022 (Feb 25, 2022); NA: Data is not available in the public domain

*Latest data for FY 2022-23 is not available in the public domain.

(In Lakh Tonnes)

Indian Scenario	Previous FY (2021-22)	Current FY (2022-23) (P)
Opening Stocks	NA	NA
Production	16.47	16.19
Imports	NA	NA
Total Supply	NA	NA
Exports	NA	NA
Domestic Consumption	NA	NA
Closing Stocks	NA	NA

Source: Source: Ministry of Agriculture (February 2023)

NA: Data is not available in the public domain; P: Provisional;

India does not export and import castor seed; India exports Castor oil and Castor meal

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 (2020-21)*	Current FY (2021-22)* (P)	Country	Previous FY (2021-22)*	Current FY (2022-23)*
1	India	19.70	17.80	NA	NA	NA
2	Brazil	0.31	0.43			
3	Africa	0.20	0.20			
4	China	0.36	0.17			

5	Thailand	0.12	0.12			
	Others**	0.85	0.84			
	World Total	21.54	19.56			

Source: Video presentation by Mr. Thomas Mielke Editor, Oil World at Global Castor Conference 2022 (Feb 25, 2022); Countries are arranged in descending order based on the figure in Current FY;
NA: Data is not available in the public domain
*Latest data for FY 2022-23 is not available in the public domain.
**: The share of other countries (except for top 5 countries) in world production is negligible. India accounts for more than 90% of the world Castor seed production.

(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)
	NA			NA		

NA: Data is not available in the public domain

(In Lakh Tonnes)

Top 10 Major producing states in India			
Rank	States	Previous FY (2021-22)	Current FY (2022-23)
1	Gujarat	14.94	14.55
2	Rajasthan	2.24	1.94
3	Southern States	0.56	0.34
	Others	0.15	0.10
	Total	17.89	16.94

Source: SEA of India dated 31 March 2022 and 25 February 2023
States are arranged in descending order based on the figure in Current FY
NA: Data is not available in the public domain;
*: The share of other states (except for top 3 states) in the domestic production is negligible. Gujarat accounts for more than 80% of the country's Castor seed production.
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)

Date	Major Policies governing trade and related changes
20-Dec-22	SEBI in its press release (PR No 38/2022) directs extension of suspension of futures and options trading for one more year beyond December 20, 2022, i.e., till December 20, 2023 for agricultural commodities including Paddy (non-basmati), Wheat, Chana, Mustard seeds and its derivatives (its complex), Crude Palm Oil, Moong, Soybean and its derivatives (its complex).

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

Date	Event	Key Details	Key Implications/Impact
05-Nov-22	Zero Covid Policy in China	China indicates no relaxation of restrictions to 'zero-Covid' policy. Scattered outbreaks across the country continue to prompt travel restrictions and lockdowns	Trading activities remained restricted. Castor oil demand adversely affected. China is the

Date	Event	Key Details	Key Implications/Impact
			largest buyer of Indian Castor oil.
11-Nov-22	Partial Relaxation w.r.t. Zero Covid Policy by Govt. of China	China announced the relaxation of some of its hardline Covid-19 restrictions on Friday (11 Nov), after authorities had vowed to stick to a zero-tolerance virus approach despite mounting economic damage. In a further sign of easing, the National Health Commission said it was abolishing the requirement to identify and isolate "secondary close contacts".	Partial relaxation of restrictions raised the hopes of pick-up export demand for China.
24-Nov-22	Re-imposition of Community lockdown in China	Doggedly persisting with its much-criticized zero-Covid policy, China slipped deeper into the corona virus quagmire, as it reported a record 31,444 infections on 24 Nov 2022 with many of its cities, including Beijing, resorting to community lockdowns to stem the virus amid worsening wintery weather.	Re-imposition of Community lockdown in China adversely impacted market sentiments in expectation of slowdown of export demand for castor oil.
07-Dec-2022	Relaxation in Covid Policy by Govt. of China	On 07 Dec 2022, China announced the most sweeping changes to its tough zero-COVID policy since the pandemic began three years ago, loosening rules that curbed the spread of the virus but had hobbled the world's second-largest economy and sparked protests.	Relaxation in Covid Policy by Chinese Govt. spurt the hopes of export demand for Castor oil resuming in a full-fledged manner amid re-building of inventories by stockist and traders in China.

2. Trading related Parameter

a. Monthly and Annual traded volume (quantity in appropriate units)

Month	Year	Symbol	Traded volume (MT)
Apr	2022	CASTOR	276,670
May	2022	CASTOR	362,995
June	2022	CASTOR	306,305
July	2022	CASTOR	270,370
August	2022	CASTOR	233,665
September	2022	CASTOR	166,265
October	2022	CASTOR	156,880
November	2022	CASTOR	162,285
December	2022	CASTOR	152,375
January	2023	CASTOR	144,405
February	2023	CASTOR	150,800
March	2023	CASTOR	137,915
Annual Traded Volume (MT) (April'22 to March'23)			2,520,930

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

Symbol	Traded Volume (MT)	Deliverable Supply(MT)	Proportion
CASTOR	2,520,930	1,619,000	1.56

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

Symbol	Traded volume (MT)	Production(MT)	Proportion
CASTOR	2,520,930	1,619,000	1.56

d. Annual average Open interest as proportion of total production

Symbol	Average Open Interest (MT)	Production(MT)	Proportion
CASTOR	41,087.21	1,619,000	0.03

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

Symbol	Average Open Interest (MT)	Deliverable supply(MT)	Proportion
CASTOR	41,087.21	1,619,000	0.03

f. Monthly and Annual value of trade (in Rs. Crores)

Month	Year	Symbol	Traded value (in Rs. Crores)
April	2022	CASTOR	2,005
May	2022	CASTOR	2,705
June	2022	CASTOR	2,264
July	2022	CASTOR	1,987
August	2022	CASTOR	1,725
September	2022	CASTOR	1,230
October	2022	CASTOR	1,125
November	2022	CASTOR	1,194
December	2022	CASTOR	1,112
January	2023	CASTOR	1,028
February	2023	CASTOR	1,024
March	2023	CASTOR	874
Annual Traded Volume (in Rs Crores) (April'22 to March'23)			18,273

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

Expiry Month	Year	Symbol	Total Delivery (in MT)
April	2022	CASTOR	2,075
May	2022	CASTOR	6,385
June	2022	CASTOR	2,015
July	2022	CASTOR	8,390
August	2022	CASTOR	3,635
September	2022	CASTOR	5,525
October	2022	CASTOR	13,075
November	2022	CASTOR	4,680
December	2022	CASTOR	7,470
January	2023	CASTOR	12,675
February	2023	CASTOR	580
March	2023	CASTOR	1,580
Annual value of delivery (in MT) (April'22 to March'23)			68,085

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

Expiry Month	Year	Symbol	Total Delivery Value (in Cr)
April	2022	CASTOR	14.88
May	2022	CASTOR	47.76
June	2022	CASTOR	15.26
July	2022	CASTOR	62.40
August	2022	CASTOR	27.33
September	2022	CASTOR	41.16
October	2022	CASTOR	93.34
November	2022	CASTOR	34.63
December	2022	CASTOR	55.50
January	2023	CASTOR	92.10
February	2023	CASTOR	4.05
March	2023	CASTOR	10.29
Annual value of delivery (in Crores) (April'22 to March'23)			499

i. Monthly and Annual Average Open Interest (OI) (in appropriate units)

Month	Year	Symbol	Average Open Interest (MT)
Apr	2022	CASTOR	35,744
May	2022	CASTOR	74,349

June	2022	CASTOR	75,074
July	2022	CASTOR	62,487
August	2022	CASTOR	51,143
September	2022	CASTOR	45,382
October	2022	CASTOR	35,176
November	2022	CASTOR	24,697
December	2022	CASTOR	25,782
January	2023	CASTOR	27,791
February	2023	CASTOR	21,892
March	2023	CASTOR	16,518
Annual Average OI (MT) (April'22 to March'23)			41,087

j. Annual average volume to open interest ratio

24.44%

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

Symbol	Member Count	Client Count
CASTOR	122	1,862

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	17.99%
Maximum Daily Value	22.72%

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

Commodity	Count
CASTOR	31

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

n. Algorithmic trading as percentage of total trading

Commodity	%
CASTOR	8.28%

o. Delivery defaults

Number of instances	1
Quantity involved	15 MT
Value involved	0.11 Cr

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).
Not Applicable

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).
Not Applicable

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

Correlation			
	Futures	*Spot*	*Mandi*
Futures	1		
Spot	0.5667	1	
Mandi	0.411093	0.789836	1

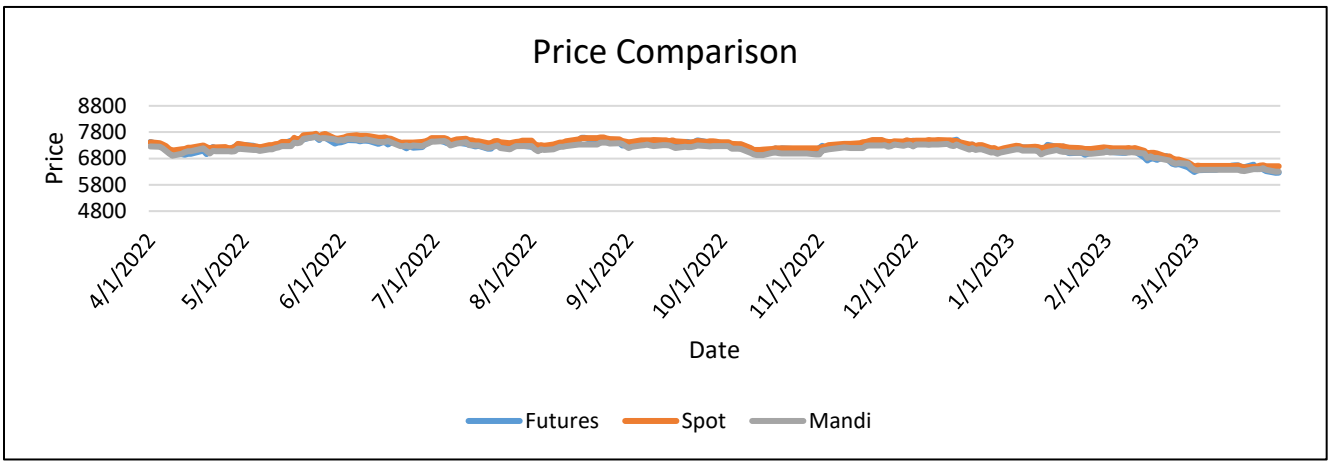
Standard Deviation			
	Futures	*Spot*	*Mandi*
Futures	1	0.669214	0.771241
Spot	1.494291	1	1.152459
Mandi	1.296611	0.86771	1

d. Correlation between international futures & international spot prices along with ratio of standard deviation (wherever relevant comparable are available).
Not Available

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.

Correlation			
	Futures	*Spot*	*Mandi*
Futures	1		
Spot	0.5667	1	
Mandi	0.411093	0.789836	1

Standard Deviation			
	Futures	*Spot*	*Mandi*
Futures	1	0.669214	0.771241
Spot	1.494291	1	1.152459
Mandi	1.296611	0.86771	1



Source: Spot and Future Prices: NCDEX, Mandi Prices: Agmarknet

f. Maximum & Minimum value of daily futures price volatility and spot price volatility along with disclosure of methodology adopted for computing the volatility.

	Futures		Spot	
Volatility	Month	Value	Month	Value
Max	Apr	0.01	May	0.010
Min	Sep	0.004	Sep	0.004

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 by more than 4% for near month contract	0
Backwardation by more than 4% for near month contract	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

	CASTOR
Basis Volatility	7.04
Hedge efficiency	0.72

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	District	Availability of delivery centers
Gujarat	Harij	NA
	Palanpur	NA
	Deesa	Deesa (Basis)
	Bhabhar	Bhabhar (ADC)
	Thara	NA
	Kutch	NA
	Kadi	Kadi (ADC)
	Mehsana	NA
	Patan	Patan (ADC)
	Sabarkatha	NA
	Visnagar	NA
	Vadodara	NA
	Radhanpur	NA
	Mandal	NA

State	District	Availability of delivery centers
	Barmer	

Rajastan	Jalore	NA
	Jodhpur	
	Sirohi	
	Sumerpur	
State	**District**	**Availability of delivery centers**
Andhra Pradesh	Gadwal	NA
	Kurnool	
	Mahaboobnagar	
	Wanaparthy	
	Others	
	Total	

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 ongross level (Long OI + Short OI), in MT

Month	GUJARAT	RAJASTHAN	ANDHRA PRADESH
Apr-22	23720	20529	14
May-22	84368	22765	29
Jun-22	104601	14103.2	20
Jul-22	70289	17343.3	11
Aug-22	53098	15470	14
Sep-22	50600	13210	13
Oct-22	38753	7934	1
Nov-22	28308	5190	17
Dec-22	25018	8292	12
Jan-23	26584	14956	16
Feb-23	23295	13540	5
Mar-23	19317	8255	10

***Note** - The OI for CP (Custodian Participant) is not mapped to any State/ location and hence not considered in the above data.*

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

Following list of Awareness programme, Stakeholder engagement programme has conducted for FY 2022-23

Sr. Number	Programme	Location	Number of Participants
1	Awareness Programme	Bhiloda	51
2	Awareness Programme	Dhangadhra, Surendranager Gujarat	60
3	Awareness Programme	Radhanpur,Gujarat	52
4	Awareness Programme	Motipur, Himmatnager Gujarat	30
5	Awareness Programme	Motipur, Himmatnager Gujarat	26
6	Awareness Programme	Unjha, Gujarat	33
7	Awareness Programme	Ambaji, Gujarat	50
8	Awareness Programme	Patan, Gujarat	35
9	Awareness Programme	Patan, Gujarat	40
10	Awareness Programme	Amreli, Gujarat	50
11	Awareness Programme	Botad, Gujarat	40
12	Awareness Programme	Bhuj, Gujarat	49
13	Awareness Programme	Bhiloda,Khalwad	100
14	Awareness Programme	Shamla Ji,Village-Abhapur	100
15	Awareness Programme	Mehsana	25
16	Awareness Programme	Gandhinagar	50
17	Awareness Programme	Sami, Patan	29
18	Awareness Programme	Dasada, Surendranagar	50
19	Awareness Programme	Kadi	35
20	Awareness Programme	Ahmedabad	15
21	Awareness Programme	Manund	51
22	Awareness Programme	Kolkata	35
23	Awareness Programme	Surat	18
24	Awareness Programme	Guna, Madhya Pradesh	30
25	Awareness Programme	Anjar, Lutch, Gujarat	38
26	Awareness Programme	Raipur, Chhattisgarh	112
27	Awareness Programme	Patan, Gujarat	104
28	Awareness Programme	Nashik	200
29	Awareness Programme	Udaipur	150
30	Awareness Programme	Rajkot	100
31	Awareness Programme	Hissar	100
32	Awareness Programme	Nagpur, Maharashtra	120
33	Awareness Programme	Raipur	100
34	Awareness Programme	Gwalior, Madhya Pradesh	78
35	Awareness Programme	Bhopal , MP	54
36	Awareness Programme	Indore, Madhya Pradesh	47
37	Awareness Programme	Siliguri, West Bengal	39
38	Awareness Programme	Alipurduar, West Bengal	31
39	Awareness Programme	Meerut, Uttar Pradesh	30
40	Awareness Programme	Bhopal, Madhya Pradesh	44
41	Awareness Programme	Indore, Madhya Pradesh	80
42	Awareness Programme	Chennai, Tamil Nadu	24

43	Awareness Programme	Kanpur, Uttar Pradesh	60
44	Awareness Programme	Chindwara, MP	50
45	Awareness Programme	Seoni , MP	40
46	Awareness Programme	Kolkata	25
47	Awareness Programme	Raipur, Chattisgarh	136
48	Awareness Programme	Lucknow	177
49	Awareness Programme	Rourkela	65
50	Awareness Programme	Muzaffarnagar	70
51	Awareness Programme	Kochi	86
52	Awareness Programme	Bhilai	70
53	Awareness Programme	Thalamadla	80
54	Awareness Programme	Kolkata	45
55	Awareness Programme	Online	30
56	Awareness Programme	Online	18
57	Awareness Programme	Online	23
58	Awareness Programme	Odisha	9
59	Awareness Programme	Odisha	15
60	Awareness Programme	Karnataka	5
61	Awareness Programme	Bihar	18
62	Awareness Programme	West Bengal	6
63	Awareness Programme	Andhra Pradesh	29
64	Awareness Programme	Online	11
65	Awareness Programme	Online	7
66	Awareness Programme	Online	21
67	Awareness Programme	Online	6
68	Awareness Programme	Online	9
69	Awareness Programme	Online	14
70	Awareness Programme	Online	82
71	Awareness Programme	Online	28
72	Awareness Programme	Online	25
73	Awareness Programme	Online	50
74	Awareness Programme	Online	30
75	Awareness Programme	Online	25
76	Awareness Programme	Online	5
77	Awareness Programme	Online	10
78	Awareness Programme	Online	7
79	Awareness Programme	Online	13
80	Awareness Programme	Online	16
81	Awareness Programme	Online	23
82	Awareness Programme	Online	53
83	Awareness Programme	Online	17
84	Awareness Programme	Online	30
85	Awareness Programme	Online	15
86	Awareness Programme	Online	25
87	Awareness Programme	Online	35
88	Awareness Programme	Online	10
89	Awareness Programme	Online	30
90	Awareness Programme	Online	12
91	Awareness Programme	Online	6
92	Awareness Programme	Online	7
93	Awareness Programme	Online	20
94	Awareness Programme	Online	50
95	Awareness Programme	Online	30

96	Awareness Programme	Online	13
97	Awareness Programme	Online	10
98	Awareness Programme	Online	6
99	Awareness Programme	Online	6
100	Awareness Programme	Online	8
101	Awareness Programme	Online	13
102	Awareness Programme	Online	6
103	Awareness Programme	Online	25
104	Awareness Programme	Online	8
105	Awareness Programme	Online	14
106	Awareness Programme	Online	11
107	Awareness Programme	Online	10
108	Awareness Programme	Online	6
109	Awareness Programme	Online	9
110	Awareness Programme	Online	14
111	Awareness Programme	Online	16
112	Awareness Programme	Online	11
113	Awareness Programme	Online	8
114	Awareness Programme	Online	8
115	Awareness Programme	Online	13
116	Awareness Programme	Online	15
117	Awareness Programme	Online	25
118	Awareness Programme	Online	25
119	Awareness Programme	Online	26
120	Awareness Programme	Online	18
121	Awareness Programme	Online	52
122	Awareness Programme	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 programme in Major trading centre's as well as remote locations to increase hedging participation from the value chain participants.
- One to one meetings with the market participants to create awareness about the new developments / new initiatives at exchange level.
- Attend the National as well as International conferences, trade meets, seminars, etc.

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

Methodology

Regression analysis is carried out between near month futures returns and NCDEX polled spot prices returns of the FY2022-23.

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 reasonilliquid 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