

National Stock Exchange of India

Circular

Department: Listing	
Circular Ref. No: NSE/CML/2024/42	Date: December 20, 2024

To,
All Listed Entities

Subject: **Industry Standards Note on Business Responsibility and Sustainability Report (BRSR) Core.**

Dear Sir / Madam,

This is with reference to SEBI Circular No. SEBI/HO/CFD/CFD-PoD-1/P/CIR/2024/177 dated December 20, 2024, issued by the Securities and Exchange Board of India (SEBI) titled “**Industry Standards on Reporting of BRSR Core.**”

A copy of Industry Standards Note on Business Responsibility and Sustainability Report (BRSR) Core is enclosed for your reference and for necessary action at your end. The copy of the circular is also available on the NSE website (www.nseindia.com).

This is for your information please.

Yours faithfully,
For National Stock Exchange of India Ltd.

Dhaval Shah
Senior Manager – Listing Compliance

Industry Standards Note on Business Responsibility and Sustainability Report (BRSR) Core

BRSR-CORE REPORTING STANDARD

The BRSR Core Reporting Standard are prepared with the objective to help companies comply with the disclosure requirements on BRSR core made mandatory pursuant to Regulation 34(2) of SEBI LODR, 2015 and read with SEBI issued Circular SEBI/HO/CFD/CFD-SEC-2/P/CIR/2023/122 that incorporated BRSR Core into the BRSR Reporting Format.

This Reporting Standard has a normative reference to the BRSR Guidance note issued by SEBI for principle-specific guidance¹.

Main aspects covered:

Part A General Requirements

Part B Attribute-wise requirements

Part A General Requirements

1. Intensity-based calculations

Applicable to GHG Footprint (Attribute 1), Water Footprint (Attribute 2), Energy Footprint (Attribute 3), Embracing Circularity (Attribute 4)

Reporting entities should report GHG emission intensity (Scope 1 and Scope 2 emissions), Water consumption intensity, Energy intensity, and Waste intensity. Entities have to report intensity ratio for revenue adjusted for Purchasing Power Parity and Output-based intensity.

Revenue adjusted intensity for Purchase Power Parity

I. Purchasing Power Parity Calculation

Purchasing Power Parities (PPPs) are the rates of currency conversion that try to equalise the purchasing power of different currencies, by eliminating the differences in price levels among countries. As of April 2024, conversion factor for purchasing power parity for India is 22.4 (Local Currency Units, that is INR) per international dollar (the purchasing power of 1 international US\$ is equivalent to the purchasing power of 1 US\$ in the United States). In other words, for example, in 2024, INR 22.4 had the same buying power in India as 1 US\$ had in the US.

Calculating PPP Adjusted Revenue

PPP Adjusted Revenue in USD = Revenue in INR/IMF PPP Conversion Factor

Source of PPP rates: The International Monetary Fund (IMF) publishes the PPP conversion rates for all currencies. Use the latest rate available for India on their website and disclose by way of note in BRSR the rate that has been used. For FY2023-24 disclosures, the reporting entity shall use the same PPP conversion rate for the previous financial year also.

¹ [Business responsibility and sustainability reporting by listed entitiesAnnexure2 p.PDF \(sebi.gov.in\)](#)

The PPP rate for India is available at:

<https://www.imf.org/external/datamapper/PPPEX@WEO/OEMDC>

Example calculation to determine PPP-adjusted revenue

2023-24 revenue of reporting company A= 10,000 INR million

PPP conversion rate (latest available is for 2024) = 22.4 INR/Int. US\$

PPP adjusted revenue (US\$) for 2023-24 for company A= (10,000/22.4) = 446 USD million

Example calculation for intensity based on PPP-adjusted revenue Environmental Parameter

Environmental Parameter	Total Footprint	PPP-Adjusted Revenue (million \$)	Intensity (Units of footprint/million \$)
Scope 1+ Scope 2	10,000 tCO ₂ e	446	22.4 tCO ₂ e/million US\$
Water consumption	10,000 kL	446	22.4 kL/million US\$
Energy consumption	10,000 GJ	446	22.4 GJ/million US\$
Waste generation	10,000 MT	446	22.4 MT/million US\$

II. Output based intensity calculation

Outputs vary for Manufacturing and Service sector.

Manufacturing entities should use the total output of products i.e., the **Total Production to report intensity figures**

Services entities should use input measures of **Full Time Equivalent to report intensity figures**

Example calculation

Manufacturing – Steel Company

Total production of crude steel: 20tonnes

Total Scope 1 and Scope 2 emissions: 60tCO₂e

GHG emission intensity: 60/20 = 3

Service – Information Technology company

Total Full Time Equivalent: 6,00,000

Total Scope1 and Scope 2 emissions: 95,000tCO₂e

GHG emission intensity: 95000/600000 = 0.15

Reference BRSR Guidance Note Principle 6, Q No. 1, 3, and 6, entities may on voluntary basis provide intensity ratio based on other metrics – unit of product, production volume, size, number of full-time employees.

2. Spend-based Approach to Estimating Environmental Footprint:

While calculating emissions, energy consumption, and/or water consumption, where a reporting entity does not have primary data and only have annual spend data for the item, the reporting entity may use a spend-based approach to estimate the corresponding emissions, energy consumption, and/or water consumption. Refer Appendix I for detailed guidance on spend-based methodology.

Part B Attribute-wise requirement

Attribute 1: Greenhouse Gas Footprint

Q. No.	Field Name/Reporting Parameter	Standard
P6/7E	Provide details of greenhouse gas emissions (Scope 1 and Scope 2 emissions) & its intensity, in the following format:	
	Total Scope 1 (tCO ₂ e)	<p>To calculate Scope 1 and Scope 2 emissions (GHG in CO₂e / Unit of Measure), reporting entities should refer to following recognized sources for emission factors for their latest available guidance:</p> <ul style="list-style-type: none"> • NABL Accredited Lab • Intergovernmental Panel on Climate Change (IPCC) • International Energy Agency (IEA) • Department of Environment, Food & Rural Affairs (UK DEFRA) • US Environment Protection Agency (EPA) • Country specific emission factors <p>It is necessary that reporting entities disclose the source of emissions factor used.</p>
	Total Scope 2 (tCO ₂ e)	<p>For Scope 2 emissions factors specific to grid power in India, use the latest applicable CEA-published grid emission factor, where measurable data is available.</p> <p>In case the reporting entity does not have measurable data, the entity shall use a spend-based method to calculate electricity consumption.</p> <p>However, spend-based methodology should be used in a restricted manner and only initially when a data measurement is not in place. It is suggested that every entity must eventually start measuring quantitative data and spend-based methodology can be used in initial years of reporting. Where used, the reporting entity must specify the source of the</p>

		<p>spend-based consumption factor and explain its suitability for the purpose.</p> <p>Companies should not go back to spend-based method after having and reporting measurable data.</p> <p>Details on Spend-based methodology is provided in Annexure I (Carbon Accounting Proxy Methodology as attachment)</p>
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Attribute 2: Water Footprint

Q. No.	Field Name/Reporting Parameter	Standard
P6/3E	Provide details of the following disclosures related to water, in the following format:	
	Total volume of water consumption (Mn L or kL)	<p>Reporting entities which have offices, outlets, branches, and other facilities where direct measurement of water is not available or practicable, should use guidelines established by the Central Ground Water Authority (CGWA)² to estimate water consumption.</p> <p>As per CGWA guideline, the estimated consumption is 45 litres per head per working day for offices. Thus, the quantification of water usage can be done by multiplying the number of employees and workers working within the office space by the stipulated 45 litres per head per working day.</p> <p>For other countries, use consumption rates representative of the country or region to the extent practicable.</p> <p>Offices, outlets, branches, or other similar situations where directly measurement of water withdrawal, discharge, and consumption data, are available at a larger facility-level, then the sub-unit level water withdrawal, discharge, and consumption should be estimated from facility-level data as follows:</p> <p>Sub-unit level data = (Facility level data including common area consumption) * (sub-unit area in sq. ft. ÷ total facility area in sq. ft)</p>

² <https://cgwa-noc.gov.in/landingpage/Guidelines/NBC2016WatRequirement.pdf>

Attribute 3: Energy Footprint

Q. No.	Field Name/Reporting Parameter	Standard
P6/1E	Details of total energy consumption (in Joules or multiples) and energy intensity, in the following format:	
	Power delivered through the power connection may include many types of power. The different components of the power received should be properly accounted (this segregation will be required to calculate Scope 2 emissions).	
	Power delivered through the local power connection may include: <ul style="list-style-type: none"> a. Wheeled renewable power procured from a captive renewable power plant, a third party, or power exchange. b. Wheeled non-renewable power procured from a captive power plant, a third party, or power exchange. c. Renewable power procured under 'green tariff' program of the state. d. Grid power. These components should be accordingly reported under renewable or non-renewable category.	

Attribute 4: Embracing circularity - details related to waste management by the entity.

Q. No.	Field Name/Reporting Parameter	Standard
P6/9	Refer to BRSR Guidance Note for details	

Attribute 5: Enhancing Employee Wellbeing and Safety

Q. No.	Field Name/Reporting Parameter	Standard
P3/1(c)E	Spending on measures towards well-being of employees and workers (including permanent and other than permanent) in the following format	
	Cost incurred on well-being measures as a % of total revenue of the company	<p>As per BRSR Core, the KPI should include the 5 initiatives (i.e., health insurance, accident insurance, maternity benefits, paternity benefits, day care facilities) covered under question 1a and 1b under Principle 3 and additionally health & safety measures including access to mental health.</p> <p>As mentioned in BRSR Guidance Note – Principle 3, Q No. 1, in case the entity desires to disclose any additional benefit, they can do so by adding additional columns.</p>

		<p>Listed entities should prepare a schedule of cost incurred on all the above initiatives and the same should be based on the expenditure included in the relevant ledger heads in the audited trial. The schedule should include the following expenditure on well-being of employees and workers (including permanent and other than permanent employees/workers) which has been charged to the Profit & Loss account:</p> <p>a. Actual cost incurred by the company on health insurance, accident insurance, day care facilities. Any cost of health/accident insurance borne by the employee will be excluded. However, in case the health/accident insurance has been facilitated/negotiated by the company for its employees, this may be mentioned by way of a note.</p> <p>b. Cost for maternity and paternity benefits would include costs on any direct benefits provided to employees (such as Cabs for commuting, etc.) and actual salary paid to the employees during the maternity/paternity leave availed (as per Cost to company including variable pay, if the amount has been bifurcated employee wise).</p> <p>c. Cost incurred by the company on health & safety measures (including mental health) like medical benefits to employees, annual health check ups, provision of doctors/ counsellors / clinics, fitness programmes, etc. should be included.</p> <p>Revenue shall mean "Total Revenue from Operations – From Audited P&L Statement" as stated in Annexure I - Format of BRSR Core and should not include "Other Income". In case of BFSI, Total Revenue shall mean:</p> <ul style="list-style-type: none"> • "Interest Earned" and • "Other Income" except Profit / (loss) on sale of building and other assets (net)
	Number of Permanent Disabilities	<p>The term "Number of Permanent Disabilities" is not used in the BRSR Form. However, the term "High Consequence Injuries/ Ill health" used in the guidance note appears to have the same meaning as "Number of Permanent Disabilities", and therefore the same definition can be used to report under this indicator (Refer Guidance Note for BRSR format – Principle 3, Qs 11)</p>
	Employees	
	Workers	

Attribute 6: Enabling Gender Diversity in Business

Q. No.	Field Name/Reporting Parameter	Standard
P5/3(b)E	Gross wages paid to females as % of total wages paid by the entity, in the following format:	
	Current financial year	<p>The term "wages" has been used for both employees and workers (Reference: Principle 5 Essential Question 2).</p> <p>Therefore, the total wages should include:</p> <ol style="list-style-type: none"> Salaries, wages and bonus as per the disclosure made in the audited financial statements (for BFSI, this will need to be extracted from "Payments to and provisions for employees" in the audited financial statements). The same would exclude retirement benefits, ESOPs and staff welfare expenses. Bonus accrued but not paid may be apportioned between male and female staff using an appropriate basis and the basis should be disclosed. For other than permanent employees/workers, actual wages paid to non-permanent employees/workers to be considered.
	Previous financial year	
P5/7E	Complaints filed under the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013, in the following format:	
	Complaints on POSH as a % of female employees / workers	Denominator should be considered as average of number of female employees/workers at the beginning of the year and as at end of the year
	Complaints on POSH upheld	Complaints on POSH upheld shall mean the complaints regarding which the Internal Committee in its Inquiry Report has arrived at the conclusion that the allegation has been proved, in accordance with Section 13 of The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013.

Attribute 7: Enabling Inclusive Development

Q. No.	Field Name/Reporting Parameter	Standard
P8/4E	Percentage of input material (inputs to total inputs by value) sourced from suppliers	
	Directly sourced from MSMEs/ small producers	Reporting Entities shall refer to the following definitions for reporting for this parameter:

		<p>i. In case of 'small producers', the definition provided in the Guidance Note for BRSR</p> <p>ii. in case of 'micro enterprise', 'medium enterprise' and 'small enterprise' as defined in the Micro, Small and Medium Enterprises Development Act, 2006</p>
		<i>'Input material' and "total purchases" shall include all types of procurement such as raw material, spares, services, capex procurement items etc. as stated in Annexure I - Format of BRSR Core.</i>
		Input material in the form of services shall include all procured third-party services.
		Reporting under this KPI shall only be applicable to Indian entities within the reporting boundary
	Directly from within India	<i>'Input material' and "total purchases" shall include all types of procurement such as raw material, spares, services, capex procurement items etc. as stated in Annexure I - Format of BRSR Core.</i>
		Input material in the form of services shall include all procured third-party services.
		Reporting under this KPI shall only be applicable to Indian entities within the reporting boundary.
P8/5E	Job creation in smaller towns – Disclose wages paid to persons employed (including employees or workers employed on a permanent or non-permanent / on contract basis) in the following locations, as % of total wage cost. (Place to be categorized as per RBI Classification System - rural / semi-urban / urban / metropolitan)	
1.	Rural Semi-urban Urban Metropolitan	<p>The term 'wages' shall be reported as per guidance provided under Attribute 6.</p> <p>Salaries and wages paid to all employees/workers employed in small towns shall be reported in accordance with the RBI Classification.</p> <p>Reporting on jobs created by reporting entities for this parameter shall be calculated as follows:</p> <p>% of job creation in the specified locations i.e., rural, semi-urban, urban, metropolitan is equal to</p> $100 \times \frac{\text{total wages} + \text{total contractual payments for labour in}}{\text{total wages} + \text{total contractual payments for labour in}}$

		<p>a specified location for all employees, whether permanent or contractual) ÷ (total wages + total contractual payments for labour workers by the company in all locations within India for all employees, whether permanent or contractual)</p>
		While reporting under this parameter, the reporting entities shall take into account the actual location of the job and not the location wherein the employee is situated.
		Reporting under this KPI shall only be applicable to Indian entities within the reporting boundary.

Attribute 8: Fairness in Engaging with Customers and Suppliers

Q. No.	Field Name/Reporting Parameter	Standard
P9/7E	Provide the following information relating to data breaches:	
	(b) Percentage of data breaches involving personally identifiable information of customers	<p>Reporting entities shall report the number of cyber security incidents in accordance with their reporting during the year to CERT-In as per the direction dated 28 April 2022 issued by the Indian Computer Emergency Response Team, under the aegis of the Ministry of Electronics and Information Technology, under Section 70-B (6) of the Information Technology Act 2000.</p> <p>Reporting companies shall provide percentage of the cyber security incidents as reported to CERT-In that involved personally identifiable information of customers against the total cyber security incidents reported to CERT-In.</p> <p>For cyber security incidents in jurisdictions outside India, reporting may be done basis regulatory requirement/reporting, if any, in the respective jurisdiction. In the absence of the same, the guidance in CERT-In should be used.</p>

Attribute 9: Open-ness of business

Q. No.	Field Name/Reporting Parameter	Standard
P1/8E	Number of days of accounts payables ((Accounts payable *365) / Cost of goods/services procured) in the following format	
	Number of days of accounts payable	<p>The BFSI sector shall include relevant items under 'Other Liabilities' Schedule as reported in their financial statements.</p> <p>"Cost of Goods/Services Procured" shall be reported as per guidance for total purchases under Attribute 7.</p> <p>The relevant items under Trade Payables as reported in the financial statement shall be included against Accounts Payable</p>
P1/9E	Open-ness of business Provide details of concentration of purchases and sales with trading houses, dealers, and related parties along-with loans and advances & investments, with related parties, in the following format	
	Concentration of purchases:	'Purchases' for this parameter shall be reported as per the guidance under Attribute 7.
	(a) Purchases from trading houses as % of total purchases	<p>The definition for trading house shall be as follows:</p> <p><i>A "trading house" is a specialized legal entity primarily engaged in the business of export, import, and/or domestic trade of goods and services, facilitating such import, export and/or domestic trade and providing related services to support these transactions.</i></p>
	(b) Number of trading houses where purchases are made from	
	(c) Purchases from top 10 trading houses as % of total purchases from trading houses	
	Concentration of sales:	Sales shall mean sale of good and services. In case of the BFSI sector, total sales shall mean total revenue. Accordingly, reporting under the sub-parameters shall be total revenue for the sub-parameter as a % to the total revenue in case of the BFSI sector.
	(a) Sales to dealers / distributors as % of total sales	"dealer" or "distributor" means any person who whether for commission, remuneration or otherwise transfer or facilitates such transfer of the right to use any goods or services for any purpose (whether or not for a specified period) for cash, deferred payment or other valuable consideration.
	Share of related party transactions (RPTs) in:	The BRSR Core reporting shall use the definition of 'related party' and 'related party transaction' as defined under Regulation 2 (1) (zb) and
	(a) Purchases (Purchases with related parties / Total Purchases)	

	(b) Sales (Sales to related parties / Total Sales)	Regulation (1) (zc) of the LODR Regulations respectively.
	(c) Loans & advances (Loans & advances given to related parties / Total loans & advances)	Sales and Purchases will have the same meaning as in this Attribute above.
	(d) Investments (Investments in related parties / Total Investments made)	<p>It is clarified that investments with related parties (BRSR Core) shall be clarified to mean Investments in related parties.</p> <p>Loans and Advances and Investments should be taken as per relevant schedules in the audited Balance sheet.</p>

Carbon Accounting Proxy (CAP) Methodology for Estimating Scope 1 & Scope 2 Emissions

Based on recent stakeholder inputs, many enterprises in India find it challenging to quantify their carbon footprint accurately using the base methodology laid out in the SEBI BRSR Core disclosures ([Annexure](#)). This is primarily due to the lack of direct access to quantity-based data for fuel, refrigerants and electricity consumption. While it is vital that companies in India improve their ability to internally collect quantitative data around fuel consumption, electricity use and fugitive emissions to comply with BRSR Core requirements, there is a need for short-term guidance around a standardised, accessible and flexible carbon accounting methodology that is based on more easily available ‘Spend data’ for fuel and electricity consumption in order to estimate enterprise Scope 1 and Scope 2 emissions.

This memo outlines a provisional ‘spend-based’ methodology for calculating Scope 1 and 2 carbon emissions that can be leveraged by enterprises in India for their BRSR Core disclosures in the absence of the more granular data required to undertake a ‘quantity-based’ calculation.

There exists a precedent for similar spend-based guidance in international standards. For instance, the GHG Protocol allows for the use of multiple methodologies (quantity-based, spend-based, distance-based, supplier-specific, etc.) for estimating Scope 3 emissions. In order to estimate Scope 3 Purchased Goods and Services Emissions, the GHG Protocol allows for the use of a spend-based methodology for calculating emissions, with the intention of leveraging the ready availability of reliable and well-structured financial data, specifically spend information on goods and services. The US EPA provides similar guidance around using spend-based proxies for the emissions estimation of certain types of activities when quantity-based information is not available. This memo extends the same principle to create a Scope 1 and Scope 2 carbon emissions accounting framework for organisations that do not have access to quantity-based fuel and energy information.

While the Annexure in this provisional Carbon Accounting Proxy (CAP) memo aggregates pricing information from credible public sources, there are inherent uncertainties when using spend-based methods. This approach should thus be used only when access to more granular quantity-based data is unavailable, and should be phased out at the earliest date possible in favour of a more accurate quantity-based methodology.

1. Need for Provisional Spend-Based Methodology

Large enterprises in India often operate across diverse locations and regulatory environments, complicating the direct measurement of fuel and electricity usage. A quantity-based reporting of carbon emissions requires precise data on the units and quantities of the fuels, refrigerants & electricity units consumed by the organisation, which may not be readily available or accurately measurable for all entities. This data gap significantly hinders the ability of these enterprises to comply with regulatory disclosure requirements laid out in the BRSR Core

guidance. A spend-based methodology to estimate carbon emissions offers a viable alternative by leveraging audited financial data, which is readily available and subject to a high degree of rigour in accordance with generally accepted audit practices.

2. Spend-Based Methodology Explained

The Carbon Accounting Proxy (CAP) methodology estimates the direct (Scope 1) and indirect (Scope 2) green-house gas emissions (in units of carbon dioxide equivalents - CO₂e) by:

- First, using a spend-based approach to convert fuels and electricity usage data (in INR) to quantity estimates using credible public pricing information.
- Then, using the existing BRSR guidance for applying quantity-based Intergovernmental Panel on Climate Change (IPCC) emission factors to convert the above data (fuel / electricity usage) to emissions estimates.

The CAP approach involves the following steps:

- **Data Collection:** Gathering relevant data from existing financial/accounting systems on expenses related to fuels, refrigerants and electricity use across the organisation, classified state-wise, where possible;
- **Price Adjustments:** Using the CAP pricing database consisting of credible public pricing information (price factors) to convert spend-based data to quantity-based data for each type of fuel, refrigerant and electricity unit consumed;
- **Application of Emission Factors:** Applying the appropriate IPCC quantity-based emission factors to the estimated quantities in order to calculate carbon dioxide equivalent (CO₂e) emissions.
- **Aggregation:** Aggregating the calculated CO₂e emissions across all the relevant categories to derive the total Scope 1 and Scope 2 emissions footprint.

$$\text{Carbon Emissions} = (\text{Spend Data} / \text{Price Factor}) \times \text{Emission Factor}$$

3. Inherent Uncertainties

While the spend-based approach facilitates carbon accounting for enterprises lacking quantity-based data, it inherently carries some uncertainties. These include:

- **Variability in Pricing Information:** Public pricing data may not reflect actual prices paid due to negotiated contracts, bulk discounts, seasonal shifts or other factors.
- **Heterogeneity in Location / Business Unit Information:** Since the price factors are based on location and sectoral proxies, incorrect or mislabeled financial entries on expenditure could result in inaccuracies in estimated emissions.
- **Challenges with Baselineing, Intercomparisons & Target-Setting:** Comparisons of carbon accounting estimations using quantity-based and spend-based approaches are inherently hard to reconcile due to limited pricing information. Enterprises should note

that there is a significant benefit to shifting to quantity-based approaches at the earliest in order to estimate baselines, set targets and track performance of their sustainability journey.

- **Incomplete System Boundary:** This approach DOES NOT include a methodology to estimate all types of fugitive emissions, process emissions or carbon capture.

Despite these uncertainties, the CAP methodology could provide an accessible starting point for enterprises aiming to navigate the complexities of carbon accounting. This methodology enables enterprises to bypass the barriers involved in the direct measurement of quantity-based emissions estimations and provides an adaptable framework for carbon accounting that enterprises can use when they are early in their sustainability journey. It provides a basis for action and directional progress in the absence of perfect data, while emphasising the importance of continuous improvement and verification.

4. Conclusion

The adoption of the CAP methodology for Scope 1 and Scope 2 carbon accounting offers a practical solution for enterprises in India that do not have quantity-based data, enabling them to estimate their carbon footprint and engage in meaningful carbon management practices. However, enterprises should only adopt this provisional approach in the event that they are unable to follow the guidance in the BRSR, and should phase out the use of this approach as soon as possible.

Annexure-I

Spend to Quantity Conversion Price Factors for CAP

Fuel	Price for FY24	Price for FY23	Quantity Based Emission Factors	Methodology
Diesel	INR. 92.59 /litre	INR. 93.7/litre	2.68 kgCO ₂ e/litre	<ol style="list-style-type: none"> 1. Average price has been determined using prices for top 4 metro cities annualised for FY24 and FY23 2. Structured data provided by the Petroleum Planning and Analysis Cell was referred to in order to determine the national annualized average price for Diesel 3. Standard deviation in prices across cities is INR 2.19/ litre for FY24 and INR 2.5/litre for FY23
Petrol	INR 102.9/ litre	INR 104.35/litre	2.27 kgCO ₂ e/litre	<ol style="list-style-type: none"> 1. Average price has been determined using prices for top 4 metro cities annualised for FY24 and FY23 2. Structured data provided by the Petroleum Planning and Analysis Cell was referred to in order to determine the national annualized average price for Petrol. 3. Standard deviation in prices across cities is INR 4.46/litre for FY24 and INR 3.14/litre for FY23
CNG	INR 87.83/ kg	NA	2.56 kgCO ₂ e/kg	<ol style="list-style-type: none"> 1. Average price has been determined using prices for 24 states for the month of Mar'24 2. The prices for CNG for 24 different states, as of March 2024, were obtained from BPCL, a credible source. 3. Standard deviation in prices is INR 7.21/kg for FY24. 4. FY23 prices for CNG could not be obtained from credible government sources.
LPG	INR 96.51/ kg	INR 107.35/kg	2.98 kgCO ₂ e/kg	<ol style="list-style-type: none"> 1. Average price has been determined using prices for Commercial 19 kg Indane Gas for top 4 metro cities annualised for 12 months of FY24 and FY23. 2. Structured data provided by IOCL was referred to for in order to determine annualised average. 3. Standard deviation in prices across cities is INR 5.37/Kg for FY24 and INR 12.06/kg for FY23.

Crude Oil	INR 6,811 / barrel	INR 7400/ barrel	395 kgCO ₂ e/barrel	<ol style="list-style-type: none"> 1. Average prices have been determined using centralised prices provided by the Petroleum Planning and Analysis Cell for the last 24 months. 2. Structured data provided by the Petroleum Planning and Analysis Cell was referred to in order to determine the national annualized average price for Crude Oil. 3. Standard deviation in prices is INR 5.70/barrel for FY24 and INR 12.8/barrel for FY23.
Natural Gas	INR 25 / kilolitre	INR 21 / kilolitre	2.14 kgCO ₂ e/kl	<ol style="list-style-type: none"> 1. Average prices have been determined using centralised prices provided by the Petroleum Planning and Analysis Cell to arrive at the national annualised average price for the last 24 months. 2. Structured data provided by the Petroleum Planning and Analysis Cell was referred to in order to determine the national annualized average price for Natural Gas. 3. Standard deviation estimation suggests that Natural Gas estimate is highly uncertain and should not be applied without validation.
Kerosene	INR 92,676/ kilolitre	INR 112,794.78 / kilolitre	2518 kgCO ₂ e/kl	<ol style="list-style-type: none"> 1. Average price has been determined using prices for 4 top metro cities for the last 24 months provided by IOCL. 2. Structured data provided by IOCL for 4 metro cities over the past 24 months was obtained to arrive at annualized average. 3. Standard deviation in prices across states is INR 2315/kl for FY24 and INR 2962.8/kl for FY23
R-22 / HCFC-22	TBD	TBD	TBD	TBD
R-32 / HFC-32	TBD	TBD	TBD	TBD

R-113	TBD	TBD	TBD	TBD
R-124	TBD	TBD	TBD	TBD
R-124a	TBD	TBD	TBD	TBD
R-1233zd	TBD	TBD	TBD	TBD
R-514a	TBD	TBD	TBD	TBD
R-1234ze	TBD	TBD	TBD	TBD
R-513a	TBD	TBD	TBD	TBD

R-1234yf	TBD	TBD	TBD	TBD
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Methodology for calculating Coal Prices

1. Average price has been determined by using centralised prices for 23 different grades of coal as provided by the Ministry of Coal for the last 12 months.
2. [Historical Data](#) from Ministry of Coal dated 15th March, 2024 has been used to obtain annualised average prices of 23 different grades of Coal.

Coal - G1	INR 9785/tonne	INR 15159.42/ tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 1744/ tonne for FY24 and INR 2373/tonne for FY23.
Coal - G2	INR 6505/tonne	INR 9062.42/ tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 361/tonne FY24 and INR 1875/tonne for FY23
Coal – G3	INR 6187/tonne	INR 8731.33/ tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 314/tonne for FY24 and INR 1816 /tonne for FY23.

Coal – G4	INR 6189/tonne	INR 9282.58/ tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 388/tonne for FY24 for INR 1889 /tonne for FY23.
Coal – G5	INR 5971/tonne	INR 8680/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 307/ tonne for FY24 and INR 1758/tonne for FY23
Coal – G6	INR 5376/tonne	INR 7916/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 345/ tonne for FY24 and INR 1777/tonne for FY23.
Coal – G7	INR 2419/ tonne	INR 3782/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 81/ tonne for FY24 and INR 850/tonne for FY23.
Coal – G8	INR 2291/tonne	INR 3152/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 102/tonne for FY24 and INR 1245/tonne for FY23

Coal – G9	INR 2824/tonne	INR 2710/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 81/tonne for FY24 and INR 527/tonne for FY23.
Coal – G10	INR 2661/tonne	INR 2854.08/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 119/tonne for FY24 and INR 628 /tonne for FY23
Coal – G11	INR 1968/tonne	INR 2473.67/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 79/ tonne for FY24 and INR 301/tonne for FY23.
Coal – G12	INR 1868/tonne	INR 2579/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 179/tonne for FY24 and INR 537/tonne for FY23
Coal – G13	INR 1782/tonne	INR 2359/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 79/tonne for FY24 and INR 351/tonne for FY23

Coal – G14	INR 1398/tonne	INR 2048.08/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 113/tonne for FY24 and INR 337/tonne for FY23
Coal – G15	INR 1170/tonne	INR 1773.33/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 96/ tonne for FY24 and INR 506/tonne for FY23.
Coal – G16	INR 4591/tonne	INR 3849/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is 0 for FY24 and INR 1096/tonne for FY23.
Coal – G17	INR 712/ tonne	INR 641.67/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 10/tonne for FY24 and INR 12/tonne for FY23.
Coal - ST-I	INR 24619/ tonne	INR 26821/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 2953/tonne for FY24 and INR 4906 /tonne for FY23

Coal - ST-II	INR 22100/ tonne	INR 26554/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 2800/tonne for FY24 and INR 11273/tonne for FY23
Coal - W-I	INR 5929/tonne	INR 6212/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 249/tonne for FY24 and INR 0 /tonne for FY23
Coal - W-II	INR 5005/ tonne	INR 5822/ tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 210/ tonne for FY24 and INR 348/tonne for FY23
Coal - W-III	INR 4208/ tonne	INR 5767/ tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 719/ tonne for FY24 and INR 566/tonne for FY23.
Coal - W-IV	INR 2297/ tonne	INR 2644/tonne	2440.68 kgCO2e/tonne	1. Standard deviation in prices across 12 month is INR 105/ tonne for FY24 and INR 186/tonne for FY23.

State Wise Electricity Prices

Approach & Methodology

- State-specific average electricity prices are taken from the Central Electricity Authority's (CEA) publication, '[Electricity Tariff & Duty & Average Rates of Electricity Supply in India](https://cea.nic.in/wp-content/uploads/fs_a/2023/11/Book_2022.pdf).'
- Assumes consumption patterns for various consumer categories defined by their sanctioned load and consumption units to estimate the average electricity price.
- The average electricity prices encompass two main components: a) Fixed charges (monthly fees), b) Energy charges (cost per unit of electricity consumed) determined by the tariff orders issued by respective State Electricity Regulatory Commissions, and any government subsidies that may be applicable. Additionally, other charges like cross-subsidy surcharge, wheeling charges, and electricity duty are also considered.
- Data from the most recent edition (2022-2023) was used to represent current pricing structures. The methodological rigour employed by the CEA in compiling this data ensures the reliability and validity of the subsequent analysis.

Reference: Central Electricity Authority. 'Electricity Tariff & Duty & Average Rates of Electricity Supply in India [Report - Mar 2022]', published in 2023. https://cea.nic.in/wp-content/uploads/fs_a/2023/11/Book_2022.pdf

(accessed April 5, 2024)

State level Electricity Tariff was obtained from **PART 3 - Average Rates of Electricity Supply and Electricity Duty** between page number 151-168.

Key Assumptions

- Prices are computed based on assumed consumption at various levels of sanctioned load of consumers.
- For both commercial and industrial connection categories, state-wise price slabs reported by CEA were equally weighted to determine average prices for sanctioned loads ≤ 10 kW and ≤ 30 kW (commercial) and ≤ 15 kW ≤ 100 kW (industrial).
- This calculation employs specific sanctioned load slabs (e.g., 2 kW, 5 kW, 10 kW, 20kW, and 30kW for commercial; 5 kW, 10 kW, 15 kW, 50 kW, and 100 kW for industrial) and calculates an equal weighted average of the prices reported for these slabs from CEA data.
- Although this method assumes consistent pricing within the range, standard deviations are also reported to provide a sense of the variation.

State Wise Price for Commercial Connection (For Sanctioned Load ≤ 10 kW)

Name of Utility	Average Price (Rs. / kWh)	Standard Deviation (Rs. / kWh)	Emission Factors kgCO ₂ e/kWh
Andaman & Nicobar Islands	9.93	1.58	0.716
Andhra Pradesh	9.74	0.65	0.716
Arunachal Pradesh	5.00	0.00	0.716
Assam	8.47	0.00	0.716
Bihar (Urban Areas)	8.81	0.23	0.716
Bihar (Rural Areas)	7.68	0.25	0.716
Chandigarh	5.55	0.15	0.716
Chhattisgarh	8.44	1.00	0.716
Dadra & Nagar Haveli	3.96	0.11	0.716
Daman & Diu	3.91	0.11	0.716
Delhi (BYPL/BRPL/NDPL-TPDDL)	10.80	1.69	0.716
Delhi (NDMC)	10.80	1.69	0.716
Goa	5.48	0.33	0.716
Gujarat	5.62	0.00	0.716
Gujarat- (Torrent Power Ltd., Ahmedabad)	6.13	0.09	0.716
Gujarat- (Torrent Power Ltd., Surat)	5.78	0.00	0.716
Haryana	7.16	0.00	0.716
Himachal Pradesh	5.74	0.18	0.716
Jammu & Kashmir and Ladakh	5.28	1.19	0.716
Jharkhand (Urban Areas)	6.81	0.16	0.716
Jharkhand (Rural Areas)	6.19	0.16	0.716
Karnataka (Bruhat Bangalore Mahanagara Palike, Municipal Corp. & all Urban)	10.80	0.08	0.716
Karnataka (Areas under Village Panchayats)	10.18	0.07	0.716
Kerala	10.00	1.21	0.716
Lakshadweep	8.66	0.66	0.716
Madhya Pradesh (Urban Areas)	8.49	0.03	0.716
Madhya Pradesh (Rural Areas)	8.26	0.03	0.716
Maharashtra	11.44	0.70	0.716

Maharashtra - Mumbai - (B.E.S.T)	9.16	0.68	0.716
Maharashtra - Mumbai - (Adani Electricity)	9.82	0.68	0.716
Maharashtra - Mumbai - (TATA's)	9.54	0.68	0.716
Manipur	7.95	0.21	0.716
Mizoram	7.52	0.05	0.716
Meghalaya	7.98	0.14	0.716
Nagaland	8.48	0.32	0.716
Odisha	7.57	0.42	0.716
Puducherry	7.48	0.41	0.716
Punjab	8.50	0.18	0.716
Rajasthan	10.20	0.27	0.716
Sikkim	5.50	0.60	0.716
Tamil Nadu	8.66	0.22	0.716
Tripura	7.78	0.43	0.716
Uttarakhand	6.65	0.00	0.716
Uttar Pradesh (Urban)	11.50	0.94	0.716
Uttar Pradesh (Rural)	6.70	0.00	0.716
West Bengal (Urban)	9.88	0.75	0.716
West Bengal (Rural)	9.87	0.75	0.716
West Bengal - (CESC Ltd., Kolkata)	9.78	0.87	0.716
West Bengal - (IPCL)	6.24	0.38	0.716
D.V.C (Jharkhand Area)	5.50	0.00	0.716
Telangana	9.66	0.51	0.716

State Wise Price for Commercial Connection (For Sanctioned Load ≤ 30 kW)

Name of Utility	Average Price (Rs. / kWh)	Standard Deviation (Rs. / kWh)	Emission Factor
Andaman & Nicobar Islands	12.20	0.2	0.716
Andhra Pradesh	10.54	0.0	0.716
Arunachal Pradesh	5.00	0.0	0.716

Assam	8.71	0.3	0.716
Bihar (Urban Areas)	9.07	0.0	0.716
Bihar (Rural Areas)	7.95	0.0	0.716
Chandigarh	5.74	0.0	0.716
Chhattisgarh	9.62	0.0	0.716
Dadra & Nagar Haveli	4.08	0.0	0.716
Daman & Diu	4.03	0.0	0.716
Delhi (BYPL/BRPL/NDPL-TPDDL)	11.77	0.0	0.716
Delhi (NDMC)	11.77	0.0	0.716
Goa	5.87	0.0	0.716
Gujarat	6.15	0.0	0.716
Gujarat- (Torrent Power Ltd., Ahmedabad)	7.16	0.0	0.716
Gujarat- (Torrent Power Ltd., Surat)	7.20	0.0	0.716
Haryana	7.89	0.6	0.716
Himachal Pradesh	6.63	0.0	0.716
Jammu & Kashmir and Ladakh	6.56	0.0	0.716
Jharkhand (Urban Areas)	6.97	0.0	0.716
Jharkhand (Rural Areas)	6.38	0.0	0.716
Karnataka (Bruhat Bangalore Mahanagara Palike, Municipal Corp. & all Urban)	10.88	0.0	0.716
Karnataka (Areas under Village Panchayats)	10.27	0.0	0.716
Kerala	11.16	0.0	0.716
Lakshadweep	9.37	0.0	0.716
Madhya Pradesh (Urban Areas)	9.46	0.0	0.716
Madhya Pradesh (Rural Areas)	9.16	0.0	0.716
Maharashtra	14.68	5.6	0.716
Maharashtra - Mumbai - (B.E.S.T)	9.90	2.0	0.716
Maharashtra - Mumbai - (Adani Electricity)	10.77	2.3	0.716
Maharashtra - Mumbai - (TATA's)	10.28	2.1	0.716
Manipur	8.18	0.0	0.716
Mizoram	7.58	0.0	0.716
Meghalaya	8.14	0.0	0.716
Nagaland	8.84	0.0	0.716

Odisha	8.02	0.0	0.716
Puducherry	7.92	0.0	0.716
Punjab	8.77	0.1	0.716
Rajasthan	11.54	0.0	0.716
Sikkim	6.56	0.6	0.716
Tamil Nadu	8.90	0.0	0.716
Tripura	8.26	0.0	0.716
Uttarakhand	7.22	0.8	0.716
Uttar Pradesh (Urban)	12.45	0.0	0.716
Uttar Pradesh (Rural)	6.70	0.0	0.716
West Bengal (Urban)	10.69	0.0	0.716
West Bengal (Rural)	10.69	0.0	0.716
West Bengal - (CESC Ltd., Kolkata)	10.72	0.0	0.716
West Bengal - (IPCL)	6.57	0.1	0.716
D.V.C (Jharkhand Area)	5.50	0.0	0.716
Telangana	10.32	0.0	0.716

State Wise Price for Industrial Connection (For Sanctioned Load ≤ 15 kW - Small Industries)

Name of Utility	Average Price (Rs. / kWh)	Standard Deviation Rs. / kWh)	Emission Factor kgCO ₂ e
Andaman & Nicobar Islands	8.15	0.69	0.716
Andhra Pradesh	7.26	0.00	0.716
Arunachal Pradesh	4.30	0.00	0.716
Assam (Urban Areas)	5.67	0.00	0.716
Assam (Rural Areas)	5.34	0.00	0.716
Bihar	8.67	0.00	0.716
Chandigarh	4.61	0.00	0.716
Chhattisgarh	5.95	0.00	0.716
Dadra & Nagar Haveli	4.32	0.44	0.716
Daman & Diu	4.36	0.00	0.716

Delhi (BYPL/BRPL/NDPL-TPDDL)	10.89	0.00	0.716
Delhi (NDMC)	10.89	0.00	0.716
Goa	4.78	0.13	0.716
Gujarat	5.79	0.00	0.716
Gujarat- (Torrent Power Ltd., Ahmedabad)	5.67	0.09	0.716
Gujarat- (Torrent Power Ltd., Surat)	5.42	0.21	0.716
Haryana	7.27	0.19	0.716
Himachal Pradesh	4.96	0.06	0.716
Jammu & Kashmir and Ladakh	4.18	0.00	0.716
Jharkhand	7.20	0.69	0.716
Karnataka (Bruhat Bangalore Mahanagara Palike, Municipal Corp. & all Urban)	8.14	0.33	0.716
Karnataka (Areas under Village Panchayats)	7.64	0.33	0.716
Kerala	6.47	0.22	0.716
Lakshadweep	6.87	0.00	0.716
Madhya Pradesh (Urban Areas)	9.52	0.00	0.716
Madhya Pradesh (Rural Areas)	8.68	0.00	0.716
Maharashtra	7.47	0.23	0.716
Maharashtra - Mumbai - (B.E.S.T)	7.35	0.20	0.716
Maharashtra - Mumbai - (Adani Electricity)	8.23	0.20	0.716
Maharashtra - Mumbai - (TATA's)	7.66	0.20	0.716
Manipur	5.32	0.00	0.716
Mizoram	6.71	0.10	0.716
Meghalaya	7.83	0.00	0.716
Nagaland	6.30	0.11	0.716
Odisha	6.78	0.02	0.716
Puducherry	6.38	0.00	0.716
Punjab	7.41	0.00	0.716
Rajasthan	7.90	0.10	0.716
Sikkim (Urban)	6.12	0.47	0.716
Sikkim (Rural)	4.49	0.57	0.716
Tamil Nadu	6.16	1.20	0.716
Tripura	8.04	0.14	0.716

Uttarakhand	5.93	0.00	0.716
Uttar Pradesh (Urban)	10.18	0.34	0.716
Uttar Pradesh (Rural)	9.41	0.32	0.716
West Bengal (Urban)	7.87	0.50	0.716
West Bengal (Rural)	7.67	0.48	0.716
West Bengal - (CESC Ltd., Kolkata)	7.89	0.38	0.716
West Bengal - (IPCL)	5.13	0.40	0.716
D.V.C (Jharkhand Area)	6.17	0.00	0.716
Telangana	7.25	0.04	0.716

State Wise Price for Industrial Connection (For Sanctioned Load \leq 100 kW - Medium Industries)

Name of Utility	Average Price (Rs. / kWh)	Standard Deviation (Rs. / kWh)	Emission Factors
Andaman & Nicobar Islands	8.32	1.3	0.716
Andhra Pradesh	7.26	0.0	0.716
Arunachal Pradesh	4.30	0.0	0.716
Assam (Urban Areas)	6.57	1.3	0.716
Bihar	8.81	0.2	0.716
Chandigarh	5.13	0.7	0.716
Chhattisgarh	6.53	0.8	0.716
Dadra & Nagar Haveli	4.39	0.4	0.716
Daman & Diu	5.68	1.9	0.716
Delhi (BYPL/BRPL/NDPL-TPDDL)	10.89	0.0	0.716
Delhi (NDMC)	10.89	0.0	0.716
Goa	4.82	0.2	0.716
Gujarat	6.02	0.3	0.716
Gujarat- (Torrent Power Ltd., Ahmedabad)	6.64	1.5	0.716
Gujarat- (Torrent Power Ltd., Surat)	6.24	1.3	0.716
Haryana	7.94	1.1	0.716

Himachal Pradesh	5.70	0.9	0.716
Jammu & Kashmir and Ladakh	4.05	0.2	0.716
Jharkhand	7.84	2.0	0.716
Karnataka (Bruhat Bangalore Mahanagara Palike, Municipal Corp. & all Urban)	8.74	1.4	0.716
Karnataka (Areas under Village Panchayats)	8.22	1.3	0.716
Kerala	6.98	0.8	0.716
Lakshadweep	6.87	0.0	0.716
Madhya Pradesh (Urban Areas)	9.52	0.0	0.716
Madhya Pradesh (Rural Areas)	8.68	0.0	0.716
Maharashtra	9.13	2.0	0.716
Maharashtra - Mumbai - (B.E.S.T)	8.77	1.7	0.716
Maharashtra - Mumbai - (Adani Electricity)	9.72	1.8	0.716
Maharashtra - Mumbai - (TATA's)	9.04	1.6	0.716
Manipur	7.05	2.4	0.716
Mizoram	6.73	0.2	0.716
Meghalaya	7.83	0.0	0.716
Nagaland	6.60	0.6	0.716
Odisha	7.02	0.3	0.716
Puducherry	6.38	0.0	0.716
Punjab	7.85	0.6	0.716
Rajasthan	8.23	0.6	0.716
Sikkim (At 11 kV)	6.63	1.5	0.716
Tamil Nadu	5.82	1.5	0.716
Tripura	8.15	0.3	0.716
Uttarakhand	7.17	1.7	0.716
Uttar Pradesh (Urban)	10.72	1.1	0.716
Uttar Pradesh (Rural)	9.92	1.0	0.716
West Bengal (Urban)	8.35	1.3	0.716
West Bengal (Rural)	8.12	1.3	0.716
West Bengal - (CESC Ltd., Kolkata)	8.46	1.3	0.716
West Bengal - (IPCL)	5.51	1.1	0.716

D.V.C (Jharkhand Area)	6.69	0.7	0.716
Telangana	7.25	0.0	0.716