

## Environmental Efficiency of Indian Companies

Manisha Sinha<sup>1</sup>

<sup>1</sup>Janki Devi Memorial College, University of Delhi, Delhi, India

### ARTICLE INFO

#### Article history:

Received Dec 7, 2023

Revised Dec 7, 2023

Accepted Dec 20, 2023

#### Keywords:

Environmental Efficiency,  
Market Capitalisation,  
Resources,  
Waste

#### Conflict of Interest:

None

#### Funding:

None

### ABSTRACT

The purpose of this study is to analyze the environmental impact of different sectors of the industry, Map the changes in environmental impact over two years from 2021-22 to 2022-23 and Derive a Figure of merit for environmental efficiency for different sectors. The study analyses the mandatory sustainability reports, for the year 2022-23, filed by the 72 of the top 100 companies, by market capitalization, in the required formats. The actual consumption of resources and generation of harmful gasses and waste has been normalized against the market capitalization of the company. The sustainability report of the 72 companies have been analyzed for the parameters of Use of water and sources of water, consumption of electricity and fuel, emission of greenhouse gasses and generation of waste and its disposal. Companies have been grouped into different sectors of the industry and an analysis of the parameters has been made for each industry sector. The study finds that an improvement in adherence to good environmental practices is seen across all industry sectors. Power generation, metal and mining and Oil and gas industry have the most environmental impact per unit of shareholder wealth created. The least environmental impact is from sectors like IT, Telecom, Healthcare and Pharma. The study recommends setting up of National Goals for reduction of environmental impacts and deriving industry wise targets from these national goals. It also recommends improvements in the structure of sustainability reports to ensure use of identical units and mandatory reporting for critical parameters.

**Corresponding Author:** Manisha Sinha, Janki Devi Memorial College, University of Delhi, Sir Ganga Ram Hospital Marg, Old Rajinder Nagar, Rajinder Nagar, New Delhi, Delhi, 110060, India. Tel. +011-49876630. E-mail: [msinha@jdm.du.ac.in](mailto:msinha@jdm.du.ac.in)



© Manisha Sinha

This is an open access article under the CC BY-SA 4.0 international license.

### 1. Introduction

This study analyses the sustainability reports for the year 2022-2023 of 72 of the top 100 companies by market capitalisation listed on the Bombay Stock Exchange; for this study, the actual consumption of resources and generation of harmful gasses and waste has been normalised against the market capitalisation of the company. The sustainability reports of the 72 companies have been analysed for the following parameters.

- Use of water and sources of water
- Consumption of electricity and fuel
- Emission of Greenhouse gasses
- Generation of waste and its disposal

Companies have been grouped into different sectors of the industry, and an analysis of the parameters has been made for each industry sector.

The study also maps the changes over two years, from 2021-2022 to 2022-2023, and analyses them for improvements in the sustainability of operations. A metric for the economic efficiency of the industries is derived to analyse which industry sectors have the most environmental impact per unit of shareholder wealth created.

## 2. Literature Review

Several studies have been conducted to assess the consumption of natural resources, generation of waste, and emission of greenhouse gasses by industry. However, there has yet to be a study to analyse these factors together for the industries in India.

Obaideen et al., 2022, examine the role of wastewater treatment in achieving sustainable development goals. They find that wastewater treatment could contribute to achieving 11 out of 17 SDGs, mainly by increasing water availability.

Mamun et al., 2022, studied the energy and groundwater consumption in 2019 for 15 textile dyeing mills in Bangladesh and concluded that an annual reduction of 5% in the consumption of groundwater and energy could save an equivalent of 4167 tons of CO<sub>2</sub> emissions.

Lamb et al., 2021, analyse the GHG emissions trends by sector from 1990 to 2018, highlight the major sources of change in emissions across ten regions around the world, and find that there has been a limited reduction of GHG emissions.

Öncel et al., 2017, present the results of the waste generation in the plastic product manufacturing industry in Turkey based on the project Hazardous Waste Management in Compliance with European Union Environmental Regulations.

Li et al., 2021, studied the coal power industry in China, which has the largest water consumption in China from 2016 to 2020. They find that the potential to reduce water consumption from the self-improvement methods of the coal industry is equivalent to that from switching to non-coal-based power generation.

### 2.1 Sustainability Reporting in India: BRSR Report

The Securities and Exchange Board of India (SEBI) mandated the filing of the Business Responsibility Report (BRR)<sup>i</sup> by the Top 100 companies from December 2012. The mandate was extended to the top 500 companies in FY 2015-16 and 1000 companies in 2019.

The National Guidelines on Responsible Business Conduct (NGRBC)<sup>ii</sup> were released. To align the BRR with the NGRBC, SEBI issued guidelines and templates for BRSR reporting in May 2021, which are now mandatory. Top 1000 listed companies from FY 2022-23. The BRSR framework aligns with internationally recognised sustainability reporting frameworks like the Global Reporting Initiative (GRI) and the United Nations Global Compact (UNGC).

### 2.2 Structure of BRSR Report

The BRSR report<sup>iii</sup> consists of three sections:

- General Disclosures require information on business operations, nature of business, contact details, subsidiaries, listing information, and details related to products and employees
- Management and process Disclosures requiring submission of details like the policies, procedures, and processes in place to comply with NGBRCs
- Principle Wise Performance Disclosure requires the companies to report the Key Performance Indicators, KPIs aligned to the nine principles of NGBRC with mandatory and optional indicators. The indicators are both quantitative and qualitative in nature. Of the 140 queries, 98 are essential, and 42 are optional leadership indicators.

## 3. Method

The study analyses the BRSR reports of the Top 100 companies, by market capitalisation, listed on the Bombay Stock Exchange (BSE)<sup>iv</sup> as of 25<sup>th</sup> June 2023. The BRSR reports are sourced from the BSE portal and companies' websites. The study period is for the financial year 2022-23 (filings up to September 1, 2023), after the introduction of BRSR reporting in May 2021.

BRSR guidelines require companies to file the reports in XBRL and pdf format. For this study, only those companies that filed reports in both XBRL and PDF formats have been considered. This is done to allow for

differences in units of reporting which are not mentioned in XBRL format but are given in the pdf formats. The total number of companies that meet these criteria, out of the top 100 companies, is 72, and those have been analysed in this study.

The BRSR filings have been analysed for data required under Principle 6: “Businesses should respect and make efforts to protect and restore the environment.” This principle measures the key resources the companies consume, like water and electricity. Further, it reports the industry’s generation of greenhouse gasses and waste.

The data is sourced from BRSR reports. The XBRL reports have been converted to Excel using the tool available through the National Stock Exchange portal for analysis.

The units of reporting have been converted to a common unit:

- Different companies have reported electricity and fuel consumption in Giga, Mega, Peta, and Tera joules. Some have reported this number in units (kWh) of electricity. All the data has been normalised to Gigajoules.
- Water consumption has been reported in kilolitres.
- Hazardous gas emissions have been reported in varying units, including kilograms, tonnes, mg/m<sup>3</sup>, etc. All the data has been converted into tonnes and tonnes-equivalent-to-CO<sub>2</sub> (Carbon dioxide).
- Waste generated has been calculated in tonnes.

After aligning all data to a common reporting unit, the reported absolute numbers have been normalised to the shareholder value by dividing them by the market capitalisation in Rs. Crores.

The data generated, which is in common units and normalised to the shareholder value being created by the company, is used for this study. For the analysis of industry sectors, the companies were grouped into sectors, and the performance of each sector was analysed.

#### 4. Results and Discussion

A total of 95 companies have filed the BRSR report for 2022-2023 till September 1, 2023. Although the filings should be in both PDF and XBRL format, some companies have used only one format for reporting. The details are shown in Figure 1.

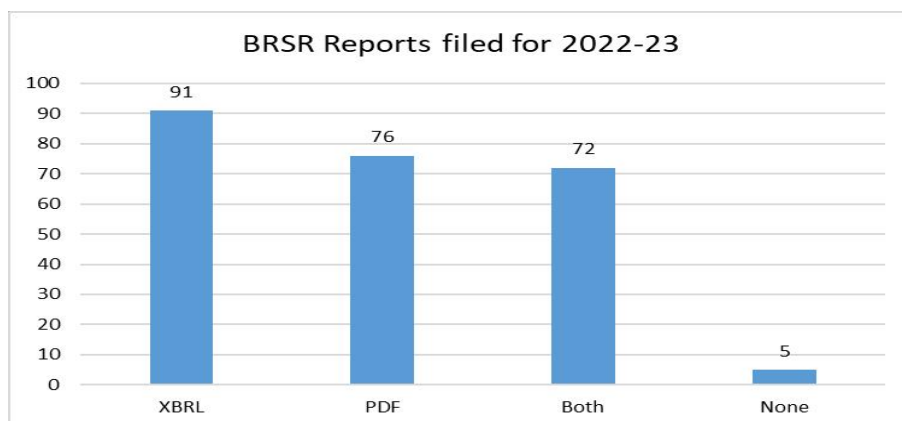


Figure 1. BRSR Filing: Financial Year 2022-2023

The companies have been classified into different industry sectors, as shown in Figure 2.

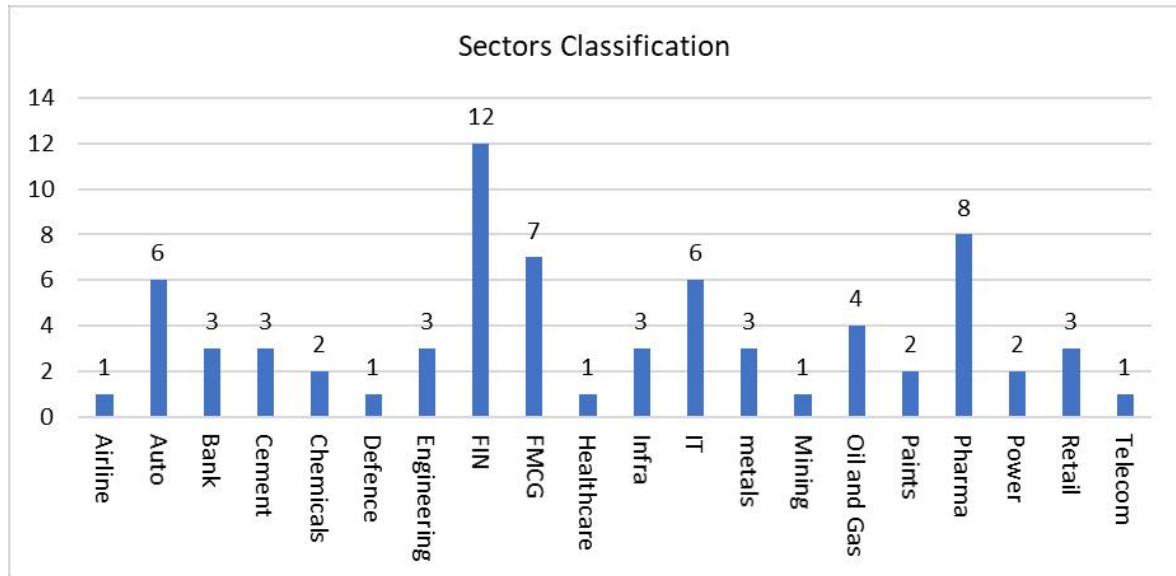


Figure 2. Classification By Sectors

#### 4.1 Use of Energy by Different Sectors

Submission of data against requirements of Principle 6 of the BRSR report has been analysed for 72 companies under study. The data has been normalised per unit of market capitalisation for each company. Finally, the companies have been grouped into industry sectors to determine an average market capitalisation value per unit for each industry sector. The following table (Table 1) gives the energy consumption details.

Table 1. Use of Energy by Different Sectors

Sector	Electricity	Fuel	Others	Total
Airline	0.22	351.92	-	352.14
Auto	4.44	4.59	0.13	9.17
Bank	2,270.36	228.69	0.01	2,499.05
Cement	396.86	995.52	-	1,392.38
Chemicals	29.51	221.94	-	251.44
Defense	6.02	3.45	-	9.47
Engineering	11.49	62.22	0.08	73.80
FMCG	1.63	10.91	0.05	12.59
FIN	209.60	3.66	0.01	213.27
Healthcare	12.82	1.05	-	13.88
Infra	7.98	3.87	-	11.84
IT	1.15	0.06	0.09	1.30
Metals	179.67	2,544.82	61.91	2,786.40
Mining	0.00	0.01	-	0.01
Oil and Gas	19.95	1,370.32	1.83	1,392.10
Paints	1.49	3.14	0.20	4.83
Pharma	7.30	9.54	0.60	17.45
Power	4.66	2,439.73	-	2,444.38
Retail	2.10	0.12	0.23	2.45
Telecom	4.62	0.72	-	5.34

The higher energy consumption per unit of market capitalisation is from the Banking, Metals and Power generation sectors. While Power generation needs fuel (mainly coal), the energy consumption by the banking sector is attributable to the consumption in data centres. Banks also use a large amount of fuel that can be attributed to the backup generators for the data centres. The metals sector, which includes companies producing steel and aluminium, also needs coal for its processes apart from electricity. The use of alternate energy sources is highest in the metals sector, mainly from Tata Steel. The company reports using turbines running on high-pressure gasses generated from blast furnaces and employing energy recovery processes. Further, the study maps the changes in energy consumption for various sectors between 2021-2022 and 2022-2023, as shown in Table 2.

Table 2. Changes in Consumption of Energy for Various Sectors Between 2021-2022 and 2022-2023

Sector	Electricity	Fuel	Others	Total
Airline	140%	58%		58%
Auto	8%	6%	419%	8%
Bank	42%	11%	3%	38%
Cement	24%	11%		15%
Chemicals	15%	5%		6%
Defense	-4%	-10%		-6%
Engineering	1%	23%	8%	19%
FMCG	9%	5%	6%	5%
FIN	6%	36%	232%	7%
Healthcare	12%	-4%		11%
Infra	34%	-39%		-4%
IT	14%	22%	25%	15%
metals	16%	2%	7%	3%
Mining	76%	-6%		-1%
Oil and Gas	7%	-5%	48%	-4%
Paints	2%	14%	33%	11%
Pharma	2%	-3%	-6%	-1%
Power	15%	47%		47%
Retail	29%	38%	65%	32%
Telecom	31%	5%		27%

It can be seen from the table that for most sectors, electricity consumption is rising while fuel-based energy consumption is decreasing or rising by a comparatively lower amount. Oil and Gas, Financial, and Auto sectors significantly increased the use of alternative energy sources. An outlier is an increase in fuel-based energy in the retail sector, which can be due to irregular power supply and increasing use of backup generators.

#### 4.2 Use of Water by Different Sectors

Companies use water for their operations. The World Economic Forum has listed “climate action failure,” “extreme weather,” and “biodiversity loss” ranking as the top three most severe risks<sup>vi</sup>. All the three top risks are related to water. United Nations predicts the world will face a deficit of 40% by 2030. It has declared 2018-2028 as the International Decade for Action, “Water for Sustainable Development”<sup>vii</sup>.

Several companies have pledged to reduce water consumption or be water positive. Companies have been increasing their investment in recycling water. Large international companies Google, Microsoft, PepsiCo, and Facebook have pledged to be water-positive by 2030. In India, Adani *Green* Energy has reported being water-positive for plants operating at more than 200MW capacity in April 2023<sup>viii</sup>.

Table 3. Use of Water by Different Sectors

Sector	Surface	Ground	3rd Party	Seawater	Others	Total
Airline	-	-	-	-	-	-
Auto	0.30	2.14	5.28	-	1.11	8.83
Bank	0.50	0.41	2.29	-	0.00	3.21
Cement	10.72	12.39	0.68	1.41	21.05	46.25
Chemicals	147.12	12.65	54.62	-	0.10	214.49
Defense	0.29	14.08	83.70	-	0.01	98.08
Engineering	1.88	7.86	23.82	-	3.71	37.27
FMCG	8.56	3.02	1.70	-	0.03	13.31
FIN	0.06	0.37	2.16	-	0.03	2.62
Healthcare	0.06	21.35	19.89	-	-	41.30
Infra	2.84	1.83	16.05	2.34	1.80	24.86
IT	0.32	0.30	0.95	-	0.17	1.74
Metals	458.99	45.59	62.83	-	77.43	644.84
Mining	1,756.85	192.60	43.56	-	553.00	2,546.01
Oil and Gas	298.16	36.66	26.89	109.12	11.57	482.40
Paints	0.70	2.36	1.67	-	0.43	5.16
Pharma	2.38	6.50	3.52	1.16	0.90	14.47
Power	7,679.91	6.74	89.06	19,489.96	-	27,265.68
Retail	0.03	0.46	0.89	-	-	1.37
Telecom	-	0.05	0.23	-	0.00	0.28

The largest water consumption is from the companies engaged in power generation. However, a significant portion of this consumption is from seawater, which Tata Power mainly uses. The mining industry uses a large amount of surface water and groundwater. Table 4 shows how water consumption has changed from 2021-2022 to 2022-2023.

Table 4. Change in Consumption of Water From 2021-2022 to 2022-2023

Sector	Surface	Ground	3rd Party	Seawater	Others	Total
Airline						
Auto	1%	5%	25%		33%	20%
Bank	-27%	26%	2373%		-47%	188%
Cement	11%	6%	90%	42%	-7%	2%
Chemicals	4%	37%	21%			9%
Defense	-96%	-14%	27%		114%	10%
Engineering	12%	-6%	12%		24%	9%
FMCG	-2%	2%	10%		6%	0%
FIN	-17%	31%	4%		-64%	4%
Healthcare	10%	3%	9%			6%
Infra	14%	26%	35%	21%	-44%	18%
IT	13%	18%	31%		41%	26%
Metals	-1%	19%	-6%		39%	3%
Mining	-4%	-9%	1508%		-54%	-22%
Oil and Gas	12%	9%	-30%	11%	-22%	7%

Paints	15%	-4%	3%		42%	3%
Pharma	7%	-7%	4%	8%	4%	0%
Power	-2%	-8%	12%	14%		9%
Retail	125%	37%	27%			31%
Telecom		1244%	67%			100%

There is a rise in the use of 3<sup>rd</sup> party sources for water needs. Groundwater use continues to rise even though many areas in the country have aquifers that are running dry.

#### 4.3 Emission of Greenhouse Gasses

Companies generate greenhouse gasses (GHG) during their operations and release them into the air. The University of California estimates that about 18% of total GHG emissions come from Industry.

The Kyoto Protocol in 1997 was the international agreement to reduce GHG. The developed nations agreed to reduce their GHG emission by an average of 5.2% by 2012. Developing nations like China and India were not included in the agreement; later, the USA withdrew from the agreement.

The Paris Climate Agreement in 2015 followed the Kyoto Protocol. 196 parties' signatories of this agreement agreed to limit the temperature rise, compared to pre-industrial levels, by 2 degrees C (preferably 1.5 degrees C). Every five years, the countries assess their progress through Global Stocktake<sup>ix</sup>. The first report, released in September 2023, shows that much work is to be done to reach the goals of the Paris Agreement.

The study analyses the GHG emissions and Scope 1 and Scope 2 emissions of industries grouped into different sectors. The data in Table 5 is normalised to the market capitalisation. No data was reported for persistent organic pollutants (POP) emission that has yet to be analysed.

Table 5. Emission of Greenhouse Gasses

Sector	NOx	SOx	Particulate Matter (PM)	Volatile Organic Compounds (VOC)	Hazardous Air Pollutants (HAP)	Total Scope 1 Emissions	Total Scope 2 Emissions
Airline	133.12	4.42	-	-	-	73.89	0.05
Auto	0.13	0.23	0.72	0.01	-	0.19	0.63
Bank							
Cement	232.98	31.94	7.97	0.00	-	166.50	5.20
Chemicals	8.40	28.53	4.17	-	-	18.50	6.47
Defense	0.41	0.17	0.77	-	-	0.36	0.70
Engineering	3.68	4.85	1.98	-	-	8.19	2.55
FMCG	1.02	1.40	0.42	-	0.00	0.49	0.19
FIN	0.37	0.25	0.37	-	-	0.40	0.80
Healthcare							
Infra							
IT	0.00	0.00	0.00	-	-	0.02	0.10
metals	18.74	54.85	5.00	-	-	251.09	18.13
Mining	1,086.43	6,059.91	220.96	-	-	690.95	103.63
Oil and Gas	106.88	114.86	13.56	9.77	5.64	105.18	5.32
Paints	0.00	0.00	0.00	-	-	0.25	0.10
Pharma	0.60	1.11	0.45	0.01	-	1.10	1.62
Power	671.00	1,324.42	66.88	-	-	337.93	5.67
Retail	1.33	0.41	0.04	-	-	0.06	0.59
Telecom	0.31	0.01	0.03	-	-	0.06	0.91

As expected, major sources of emission are from the Mining, Cement, Power, Airline, and Oil and Gas sectors. However, the metals sector scores well, with lower emissions per market capitalization unit.

Comparing the changes from 2021-2022 and 2022-2023, in Table 6, the sectors responsible for major emissions of GHGs, except the Power sector, show an increase in emissions over two years. Metals continue to reduce emissions.

Table 6. Changes in GHG Emissions From 2021-2022 and 2022-2023

Sector	NOx	SOx	Particulate Matter (PM)	Volatile Organic Compounds (VOC)	Hazardous Air Pollutants (HAP)	Total Scope 1 Emissions	Total Scope 2 Emissions
Airline	57%	57%				57%	141%
Auto	-53%	-16%	-24%	0%		9%	-3%
Bank							
Cement	13%	47%	9%			11%	35%
Chemicals	6%	15%	-21%			3%	16%
Defense	57%	83%	-5%			-1%	-14%
Engineering	14%	-21%	6%			23%	-17%
FMCG	21%	3%	-5%		14%	5%	6%
FIN	-17%	-49%	-29%			8%	-1%
Healthcare							
Infra							
IT	-32%	-49%	-23%			64%	30%
Metals	-17%	-20%	0%			3%	11%
Mining	6%	30%	54%			-4%	156%
Oil and Gas	13%	-12%	24%	0%		1%	5%
Paints	-5%	-43%	-14%			-1%	-1%
Pharma	-17%	-9%	-2%	10%		-14%	-4%
Power	-23%	-17%	-19%			4%	67%
Retail	-44%	-44%	-45%			485%	19%
Telecom	-9%	-33%	-21%			6%	18%

#### 4.4 Generation of Waste

In the process of creating value for their shareholders, companies generate waste through their operations that fill up landfills and escape to the food chain. Table 7 shows waste generated for different industry sectors in tonnes/unit of market capitalisation.

Table 7. Generation of Waste

Sector	Plastic Waste	E-Waste	Bio-Medical Waste	Construction And Demolition Waste	Battery Waste	Radio-Active Waste	Other Hazardous Waste	Other Non-Hazardous Waste
Airline	-	-	-	-	-	-	-	-
Auto	6,856	281	40	28,007	562	-	35,463	304,600
Bank	227	99	-	0	1,510	-	0	1,028
Cement	46,944	409	25	-	508	-	194,569	142,851
Chemicals	13,751	425	93	50,745	433	-	919,061	2,565,710
Defense	374	237	184	20,651	170	-	3,378	18,151
Engineering	12,324	179	0	174,795	529	-	2,134,306	616,625
FMCG	13,291	67	20	2,775	75	0	5,562	342,107
FIN	1,087	37,035	7	4	56	-	64,796	6,488



Healthcare	367	20	34,214	-	38	-	10,777	2,981
Infra	3,653	244	19	1,270,355	205	-	2,632	42,818
IT	100	511	6	26,510	219	-	27	3,329
metals	41,160	1,822	384	414,321	1,638	-	3,074,275	118,299,369
Mining	4,498	1,705	15,682	-	3,047	-	6,427,400	218,822,919
Oil and Gas	17,934	417	19	1,018	47	-	1,080,028	188,774
Paints	5,855	73	1	6,456	143	-	19,217	33,155
Pharma	754,676	1,334	46,630	6,328	22,074	-	721,476	2,987,103
Power	104	110	-	3,836	725	-	3,243	35,613,319
Retail	7,418	65	1	-	13	-	246	86,318
Telecom	168	4,303	-	-	3,736	-	3	4,579

However, several companies have processes to recover waste through recycling, reuse, or other methods. Similarly, the waste can be disposed of by methods including incineration and using landfills. This would not pose an environmental hazard if companies could safely recover or dispose of the waste generated. Table 8 below highlights the amount of waste generated and disposed of in tonnes for 2021-2022 and 2022-2023.

Table 8. Amount of Waste Generated and Disposed of in Tonnes for The Years 2021-2022 and 2022-2023

Sector	2022-2023			2021-2022		
	Total Generated	Total Disposed + Recovered	Percentage	Total Generated	Total Disposed + Recovered	Percentage
Airline	-	-	0%	-	-	0%
Auto	78,705	74,537	84%	67,320	19,011	33%
Bank	794	130,402	22510%	141	-	0%
Cement	45,408	10,318	41%	25,090	2	0%
Chemicals	453,651	134,766	62%	518,677	55,683	40%
Defense						
Engineering	287,866	79,405	30%	152,437	94,134	40%
FMCG	127,380	115,148	81%	130,710	12,258	19%
FIN	7,325	3,717	56%	4,581	1,929	28%
Healthcare	3,575	2,737	77%	3,762	2,698	72%
Infra	155,684	22,448	33%	8,579	1,867	17%
IT	34,377	33,977	73%	1,289	367	20%
Metals	18,573,042	13,104,058	74%	17,439,138	8,927,342	46%
Mining	18,631,982	51,332,105	276%	19,527,804	17,056,074	87%
Oil and Gas	310,431	260,714	54%	375,593	225,550	35%
Paints	11,262	11,080	99%	11,130	2,401	43%
Pharma	336,994	59,797	71%	293,366	49,966	36%
Power	2,987,533	2,981,869	50%	3,032,158	3,026,311	53%
Retail	18,845	15,828	61%	7,986	7,573	57%
Telecom	6,641	7,096	107%	5,232	1	0%

Bank of Baroda and Vedanta Ltd have reported that they dispose of more waste than they generate, leading to more than 100% percentage figures for 2022-2023.

It can be seen from the above table that a significant part of the waste that is generated is disposed of by the companies without harming the environment. The percentage of the waste disposed of compared with the generated waste shows a rise from 2021-2022 to 2022-2023 for all industry sectors except the engineering sector.

#### 4.5 Figure of Merit

A metric to measure the economic efficiency of different industry sectors is derived using the data analysed above. For a generation of the metric, the average value of the resources consumed, or waste/gasses generated across the industry, using normalised per unit of market capitalisation values, is calculated. After that, each sector's resources and waste/emission are divided by the average value to generate a metric number for each category. Further, the metrics for each category are added to generate a sector score.

Table 9. Figure of Merit

Sector	Energy	Surface and Ground Water	Scope 1 and 2 Emissions	Waste Generation	Total
Airline	2.26	-	0.78	-	3.04
Auto	0.06	0.00	0.01	0.02	0.09
Bank	16.03	0.00	-	0.00	16.03
Cement	8.93	0.04	1.81	0.02	10.80
Chemicals	1.61	0.28	0.26	0.17	2.33
Defence	0.06	0.03	0.01	0.00	0.10
Engineering	0.47	0.02	0.11	0.14	0.74
FMCG	0.08	0.02	0.01	0.02	0.13
Healthcare	0.09	0.04	-	0.00	0.13
Infra	0.08	0.01	-	0.06	0.15
IT	0.01	0.00	0.00	0.00	0.01
Metals	17.87	0.89	2.83	5.82	27.42
Mining	0.00	3.45	8.36	10.76	22.57
Oil And Gas	8.93	0.59	1.16	0.06	10.75
Paints	0.03	0.01	0.00	0.00	0.04
Pharma	0.11	0.02	0.03	0.22	0.37
Power	15.68	13.60	3.61	1.70	34.60
Retail	0.02	0.00	0.01	0.00	0.03
Telecom	0.03	0.00	0.01	0.00	0.05

The same data is represented in a chart.

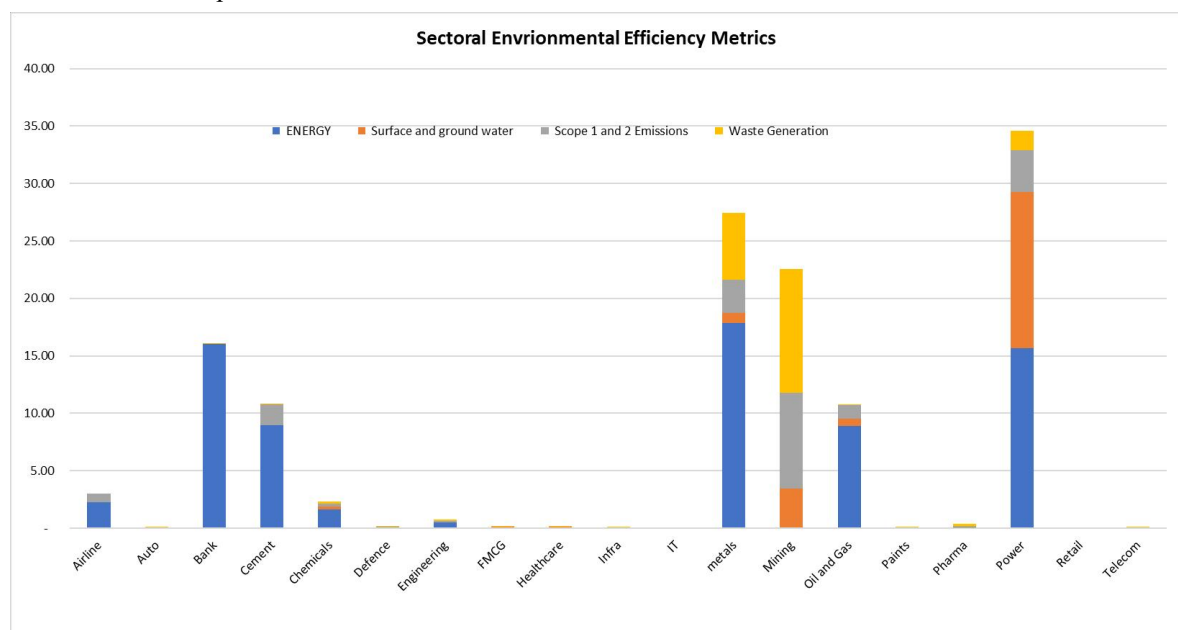


Figure 3. Figure of Merit for Different Sectors

Power generation, followed by metals and mining, is the industry that consumes the most resources, generates maximum greenhouse gasses, or generates maximum waste to generate an equivalent amount of shareholder value across the industry sectors.

## 5. Conclusion

Companies engage in different activities to create shareholder value and propel economic growth. However, in doing so, they consume resources and generate harmful waste products that stress the environment. Over the last 500 years, rapid industrialization has made a planet increasingly unlikable daily. Many areas worldwide are water-stressed, and global warming has resulted in extreme weather events that have caused loss of life and livelihood around the globe.

The world has noted this, and numerous initiatives by the United Nations, countries, industries, and other stakeholders have tried to address the harmful effects of industrial activity, leading to international agreements like the Paris Climate Agreement. Several companies have taken initiatives to reduce the environmental impact of their operations and pledged to be carbon-neutral and water-positive in the coming years.

So far, a standardised process to measure and map these initiatives by the companies did not exist, making it difficult to track progress and measure outcomes. Introducing the BRSR report by SEBI is a positive step in this direction, enabling the companies to report in a standard format.

The study has found that improvements are needed in the BRSR report to make it more comprehensive and standardised. The reporting units need to be standardised, and companies have reported electricity consumption and GHG emission in varying units, which makes comparison difficult. Companies have yet to report the mandatory data, indicating they must align their systems and processes to capture the required data. A few outliers in waste generation numbers where the waste disposed of exceeds the total waste generated have yet to be explained in the BRSR reports. It can be seen from the data analysis that an improvement in adherence to good environmental practices is seen across all industry sectors. What needs to be evident is whether this improvement aligns with the agreed goals to reduce GHG emissions.

India has yet to reach a national target to reduce water consumption or eliminate waste. While companies improve their performance for disposal of waste and reduce water use, the goals for these parameters need to be included in the reports. With targets, evaluating how well the companies reduce environmental stress is easier.

The study recommends setting up National targets for reducing environmental stress for different sectors of the economy. This would then be mapped to the targets for individual companies. Performance against these targets must be analysed and reported regularly at company, sector, and National levels.

Further, the BRSR report should be modified to make reporting mandatory for required data. The report also needs to specify the units for reporting data for different parameters.

## References

- Lamb, W. F., Wiedmann, T., Pongratz, J., Andrew, R., Crippa, M., Olivier, J. G. J., Wiedenhofer, D., Mattioli, G., Khourdajie, A. Al, House, J., Pachauri, S., Figueroa, M., Saheb, Y., Slade, R., Hubacek, K., Sun, L., Ribeiro, S. K., Khennas, S., De La Rue Du Can, S., ... Minx, J. (2021). A review of trends and drivers of greenhouse gas emissions by sector from 1990 to 2018. In *Environmental Research Letters* (Vol. 16, Issue 7). IOP Publishing Ltd. <https://doi.org/10.1088/1748-9326/abee4e>.
- Li, J., Zhang, Y., Deng, Y., Xu, D., Tian, Y., & Xie, K. (2021). Water consumption and conservation assessment of the coal power industry in China. *Sustainable Energy Technologies and Assessments*, 47. <https://doi.org/10.1016/j.seta.2021.101464>.
- Mamun, A. Al, Bormon, K. K., Rasu, M. N. S., Talukder, A., Freeman, C., Burch, R., & Chander, H. (2022). An Assessment of Energy and Groundwater Consumption of Textile Dyeing Mills in Bangladesh and Minimization of Environmental Impacts via Long-Term Key Performance Indicators (KPI) Baseline. *Textiles*, 2(4), 511–523. <https://doi.org/10.3390/textiles2040029>.
- Obaideen, K., Shehata, N., Sayed, E. T., Abdelkareem, M. A., Mahmoud, M. S., & Olabi, A. G. (2022). The role of wastewater treatment in achieving sustainable development goals (SDGs) and sustainability guidelines. *Energy Nexus*, 7. <https://doi.org/10.1016/j.nexus.2022.100112>.
- Öncel, M. S., Bektaş, N., Bayar, S., Engin, G., Çalışkan, Y., Salar, L., & Yetiş, Ü. (2017). Hazardous wastes and waste generation factors for plastic products manufacturing industries in Turkey. *Sustainable Environment Research*, 27(4), 188–194. <https://doi.org/10.1016/j.serj.2017.03.006>.

<sup>i</sup>[https://www.sebi.gov.in/legal/circulars/may-2021/business-responsibility-and-sustainability-reporting-by-listed-entities\\_50096.html](https://www.sebi.gov.in/legal/circulars/may-2021/business-responsibility-and-sustainability-reporting-by-listed-entities_50096.html).

<sup>ii</sup>[http://www.mca.gov.in/Ministry/pdf/NationalGuideline\\_15032019.pdf](http://www.mca.gov.in/Ministry/pdf/NationalGuideline_15032019.pdf).

<sup>iii</sup>[https://www.sebi.gov.in/legal/circulars/may-2021/business-responsibility-and-sustainability-reporting-by-listed-entities\\_50096.htm](https://www.sebi.gov.in/legal/circulars/may-2021/business-responsibility-and-sustainability-reporting-by-listed-entities_50096.htm).

<sup>iv</sup><https://www.bseindia.com/>.

<sup>v</sup><https://ec2-3-221-41-38.compute-1.amazonaws.com/>.

<sup>vi</sup>World Economic Forum, The Global Risks Report 2022, 17th Edition.

<sup>vii</sup>United Nations Secretary-General's Plan: Water Action Decade 2018-2028.

<sup>viii</sup><https://www.adanigreenenergy.com/newsroom/media-releases/adani-green-turns-water-positive-for-plants-with-operating-capacity-of-over-200-mw>.

<sup>ix</sup><https://unfccc.int/topics/global-stocktake>.