

The Role of Environmental Management in Improving the Environmental Performance of Industrial Institutions: A Case Study of SABIC Saudi Arabia

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Abstract: This research paper aims to explore the role of environmental management in enhancing the environmental performance of economic institutions. It includes a presentation of the theoretical aspect of both variables. In the applied aspect, SABIC, the Saudi Basic Industries Corporation, was chosen as the case study institution because it belongs to one of the most economically influential sectors directly impacting the environment. The study also investigated the current state of environmental management in this institution, along with presenting and analyzing some of its environmental performance indicators during the period (2018-2022). This study concludes that environmental management plays a fundamental and significant role in improving environmental performance, as demonstrated by the case study of SABIC. The company possesses a distinguished and successful environmental management that continuously achieves improvement in environmental performance through effective management aligned with all environmental developments, especially concerning waste and gas emissions management.

Keywords: Environmental Management; Environmental Performance; Environmental Performance Indicators; SABIC.

1. Introduction

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The continuity and sustainability of economic institutions depend on continuous improvement in their performance. Previously, economic institutions prioritized their financial performance over environmental and social performance. This led to the emergence of environmental problems and risks in recent decades due to industrial activities, resulting in increased environmental awareness and the introduction of numerous environmental regulations that govern economic activities, imposing penalties and taxes on non-compliance.

As a result, economic institutions now pay more attention to their environmental performance due to its significant impact on their overall performance and market value. This has led to the emergence of the concept of environmental management, which is a modern concept that aims to manage environmental performance through assessment and evaluation. Therefore, this research will explore the concepts related to environmental management and environmental performance, especially in industrial institutions

1.1. Research Problem

What is the role of environmental management in improving environmental performance in industrial institutions? This research problem leads to several sub-questions:

- What is the concept of environmental management and what are its objectives?
- What do we mean by environmental performance and what are its indicators?
- What is the current state of environmental management in SABIC?
- What is the level of environmental performance in SABIC?

1.2. Study Objectives

This study aims to achieve several objectives, including:

- Clarifying the concept of environmental management, its importance, and the objectives it seeks to achieve.
- Understanding environmental performance and related concepts.
- Examining SABIC's experience in adopting environmental management and evaluating its environmental performance.

1.3. Study Plan

To comprehensively address the study topic and answer the research problem, the study is divided into three axes as follows:

- **Axis One:** The theoretical framework of environmental management.
- **Axis Two:** The theoretical framework of environmental performance.
- **Axis Three:** A case study of the Saudi company SABIC for basic industries.

1.4. Study Methodology

Two methodologies were adopted:

- **Descriptive methodology:** By discussing some theoretical concepts related to environmental management, environmental performance, and introducing the Saudi company SABIC.
- **Analytical methodology:** By analyzing some environmental performance indicators of the studied institution.

2. Theoretical Framework of Environmental Management

In recent years, there has been an increasing interest among economic institutions, especially industrial ones, in the environmental field and the impact of their activities on it. Environmental considerations have become integrated into the strategies, activities, and decisions of institutions. This has highlighted the importance of the role played by environmental management in economic institutions. Therefore, this axis aims to understand the concept of environmental management, its characteristics, factors influencing its adoption, and the goals it seeks to achieve.

2.1. Concept of Environmental Management

There are several definitions that explain the concept of environmental management, including:

- Environmental management is defined as "an integral part of the overall management system, including organizational structure, planning, responsibilities,

and processes related to developing, implementing, reviewing, and preserving environmental policy and its applications" ((Najm Al-Azzawi and Abdullah Hakma, 2018, p. 207)

- According to the United Nations Environmental Program report, it is a set of environmental plans and policies aimed at monitoring and evaluating the environmental impacts of the institution, covering all production stages from obtaining raw materials to reaching the final product and its related environmental aspects. This includes implementing the best and most efficient control measures, using resources efficiently to prevent pollution, and reduce the environmental impacts of these measures as well (Khwaja Abdul Hameed Suleiman Ali, Rafai Ibrahim Rafai, and Ghulam Khalid Saad,, 2022, p. 164)
- It is also defined as a set of practices, strategies, procedures, and policies that constitute the interaction and response of the institution to its environmental reality (Al-Muqaddadi Kazem, 2016, p. 39)

From the above, we can define environmental management as: a set of policies, strategies, and integrated structures that work to assess and evaluate the environmental performance of the institution.

2.2. *Characteristics of Environmental Management*

Environmental management is characterized by several features, including: (Tee Ahmed, Hamza Bali, and Abdel-Lawi Okba, 2016, p. 112)

- The ability to deal with variables as a central factor of its activity.
- The ability to interact between the organization's resources, whether human, material, or others, and direct them towards integration and competitiveness with others.
- The ability to invest in human capital in effective creativity and innovation.
- The ability to approach similar institutions and benefit from their experiences.
- Developing team spirit through work teams, thus ensuring participation for everyone.

2.3. *Environmental Management Objectives*

Environmental management aims to achieve several objectives, including: (Brahimi Sherif, , 2016_2017, p. 47)

- Compliance with environmental regulations, legislation, and standards, and striving for cleaner production.
- Taking into account environmental factors, impacts, and considerations when making any type of decision.
- Seeking integration between environmental management systems and the organization's executive systems.
- Applying standard environmental quality criteria.
- Respecting international and local laws and regulations, thus ensuring sustainability in the market and competitiveness.
- Applying the principle of Total Quality Management.

2.4. *Factors Leading to Environmental Management*

There are several motives and factors that have led economic institutions to focus on and establish environmental management systems, including: (Mlayka Amer and Talhi Fatima Zahra, 2021, p. 330)

- Environmental laws and legislation that have compelled institutions to focus on environmental management.
- Institutions' efforts to improve their reputation and name in the job market.
- Contracts, voluntary agreements, and voluntary actions.
- Export market conditions and restrictions.
- Competition.
- Seeking to obtain certification for environmental quality compliance.

Other factors can be mentioned, including (Shiraz Mohammad Khader, without year, pp. 06-09)

- **Cost reduction:** Effective environmental management systems aim to reduce the use of raw materials and energy, leading to reduced waste disposal costs, emissions, and legal cost risks. Taxes and fees on waste, raw material use, and energy are often subject to quantity standards.
- **Environmental protection and risk reduction:** One of the key focuses of institutional managers is risk management, as economic institutions face various risks such as fires, health and safety emergencies, pollution, supply chain disruptions, and production losses. An effective environmental management system works to improve and manage some of these risks, especially concerning pollution and production loss, which can damage reputation due to medical reasons.
- **Proof of management commitment:** Any economic institution's activity, regardless of its field or specialization, affects the environment. Therefore, the managers of these institutions need to secure the institution's reputation to ensure good relations with all stakeholders by considering environmental laws and regulations in all activities and transactions.

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3.Theoretical Framework of Environmental Performance

Economic institutions, especially industrial ones, seek to reduce the impact of their activities on the environment due to environmental issues and pollution resulting from industrial activities. This has compelled international organizations and entities to enact laws and regulations to mitigate and address these effects. Consequently, institutions have become more concerned with their environmental performance. Given the importance of this type of performance, the following will clarify its concept along with some related concepts.

3.1. Performance Concept

In this part of the research, we will address the concept of environmental performance, its dimensions, and indicators.

3.1.1. Environmental Performance Concept

There are various definitions and concepts that address environmental performance, including:

- Environmental performance is defined as "the set of voluntary or mandatory actions and activities that institutions engage in, which can mitigate or alleviate environmental and social damages resulting from their activities". ((Maqimah Sabri, 2019, p. 29)

- It is also defined as "quantitative measurable results of the environmental management system related to environmental dimensions, established based on the organization's policies and environmental objectives". (Mahjoubi Nour Al-Huda and Amina Mukhlafi, 2016, p. 04)

Thus, environmental performance can be defined as the collection of impacts and results that an institution's activities have on the environment, whether positive or negative.

3.1.2. Dimensions of Environmental Performance

The dimensions of environmental performance include: (Ammarah Salma and Park Naima, 2018, pp. 195-196)

- **Environmental efficiency:** The ability of the institution to achieve set goals using available resources.
- **Environmental effectiveness:** This concept was first mentioned in 1992 at the Rio de Janeiro conference related to providing services and goods at competitive prices while meeting human needs, improving quality of life, reducing environmental impacts, and resource consumption. Therefore, environmental effectiveness seeks to improve both environmental and economic performance.

3.1.3. Indicators of Environmental Performance

Environmental performance is measured through a set of indicators, including: (Al-Kafi Mustafa Yusuf, 2014, p. 140)

- **Environmental management indicators:** Activities of management that aim to impact the institution's environmental performance, including policies, strategic visions, organizational structures related to the environmental aspect, and managerial commitment to environmental issues.
- **Environmental status indicators:** Provide information about the environmental status (global, international, regional, local), such as average temperature, pollution concentration, ozone layer thickness.
- **Environmental performance indicators:** These include:
 - Measurement areas and technical standards for products/processes, resource usage, and waste disposal.
 - Environmental impact indicators related to outputs such as water and energy consumption, gas emissions, waste.

The indicators of environmental performance may vary depending on the activity or sector. Some indicators are suitable for various institutions, while others are specific to certain institutions. For example, the following table illustrates environmental performance indicators for oil institutions:

Table 1. Environmental Performance Indicators for Oil Institutions

	Environmental Performance Indicators	Examples:
Operational	1. Gas Emissions Index	• Quantity of Gas Emissions

Environmental Indicators	2. Resource and Energy Consumption Index	Quantity of Water, Electricity, Fuel, and Gas Consumption; Quantity of Stored Waste and Hazardous Waste
	3. Waste Management Index	Quantity of Water, Electricity, Fuel, and Gas Consumption; Quantity of Stored Waste and Hazardous Waste
	4. Environmental Laws and Regulations Compliance	– Environmental Cost Value
Financial Mandatory Indicators	1. Environmental Cost Index	Environmental Cost Value
	2. Environmental Investment Index	Environmental Investment Value
	3. Environmental Taxes and Fees Index	Environmental Taxes and Fees Value

Source: (Makhloufi Amina, Mahoubi Nour El Houda, and Ben Kana Ismail,, 2016, p. 67)

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3.2. Evaluation of Environmental Performance

Environmental performance evaluation is a method to facilitate managerial decisions concerning the environmental performance of an organization. It involves gathering and evaluating information, analyzing data based on performance metrics, preparing reports, and communicating information through regular inspections, all aimed at development and improvement in performance levels.

3.2.1. Importance of Performance Evaluation

The importance of environmental performance evaluation is evident in several aspects, some of which include the following: (Zahzani Rida and Marzouki Marzouki, 2019, p. 76)

- Spreading environmental awareness due to the interest of stakeholders and the community as a whole in information related to environmental performance, presenting an objective assessment of the environmental responsibility of the institution;
- Increased pollution rates leading to higher environmental obligations for institutions, resulting in increased litigation against these institutions;
- Management's keenness to obtain information on environmental costs, seeking through this information to assess the institution's ability to achieve its strategic goals by obtaining quality products at a reasonable price without causing harm to the environment and preserving it.

3.2.2. Foundations of Environmental Performance Evaluation

The foundations of environmental performance evaluation include the following elements: (El Sheikh Daw, 2009, p. 31)

- Setting environmental goals for the institution: Firstly, environmental goals must be set, studied, and verified for their realism and accuracy, then prioritized based on their relative importance;
- Developing detailed plans to achieve environmental goals: This is done through coordination between departments based on the set goals, clarifying detailed plans, from which the overall detailed plan is developed;
- Availability of an environmental management system to control environmental activities: The environmental management system is determined based on global environmental standards. This management derives its importance from the close link between control effectiveness and the accuracy of recorded data, as assessment results rely on the accuracy and recording of data;
- Availability of an information system for monitoring and recording environmental data: Environmental data flows to information centers for performance assessment, where it is recorded, compared with set rates, and differences are revealed;
- Performance reports: Performance reports contain performance results and compare those results with what should be achieved to judge the efficiency and effectiveness of performance, through which decisions are made.

3.2.3. Challenges Facing Environmental Performance Evaluation

The process of environmental performance evaluation faces several challenges, including the following: (El Sheikh Htihat, 2013-2014, p. 37)

- Difficulty in quantifying activities and environmental issues;
- Insufficiency and weakness of environmental information and data;
- Complexity in comparing environmental impacts of business organizations with their performance;
- Difficulty in comparing environmental performance of institutions due to differences in their economic performance;
- Lack of a standardized method for reporting on the environmental performance of institutions.

4. Case Study of Saudi Basic Industries Corporation (SABIC)

To study the environmental management and environmental performance in economic institutions, the Saudi Basic Industries Corporation (SABIC) was chosen as the subject of study. This choice was made due to its prominent position among leading institutions in significant and impactful environmental sectors, in addition to its provision of disclosure and easy access to information.

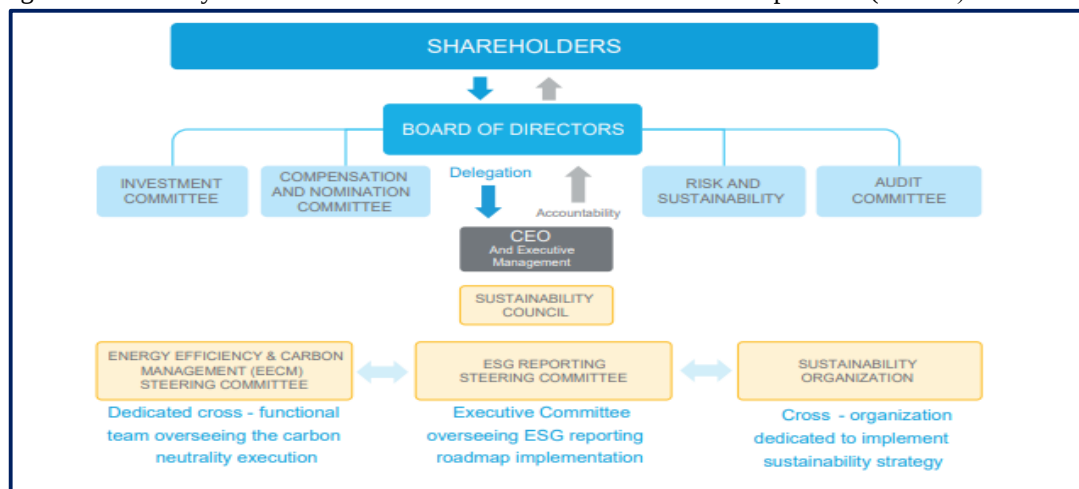
4.1. Definition of the Institution

SABIC, the Saudi Basic Industries Corporation, was established based on a royal decree in 1976 with the aim of investing in associated natural gas to produce high-value-added materials such as chemicals, polymers, and fertilizers for export and meeting domestic market demands. The company's growth continued, reaching a total production of 6.3 million metric tons in 1985, escalating further to 58 million metric tons in 2021, making SABIC the second most valuable brand in the chemicals industry after 46 years of establishment. (Saudi Basic Industries Corporation, 2024)

4.2. Sustainability Governance Structure of the Institution

The sustainability governance structure of SABIC can be clarified through the following figure:

Fig.1. Sustainability Governance Structure of Saudi Basic Industries Corporation (SABIC)



Source: (SABIC's Annual Report, 2022, p. 49)

4.3. Environmental Management at SABIC

The environmental management at SABIC is overseen by the Sustainability Council, in addition to its other responsibilities. The council is chaired by the CEO of the company and includes executive directors from strategic business units and central units. This council is responsible for setting the institution's sustainability vision, climate change strategy, priorities, and objectives, as well as supervising performance against sustainability metrics. (Saudi Basic Industries Corporation . (Saudi Basic Industries Corporation, 2024)

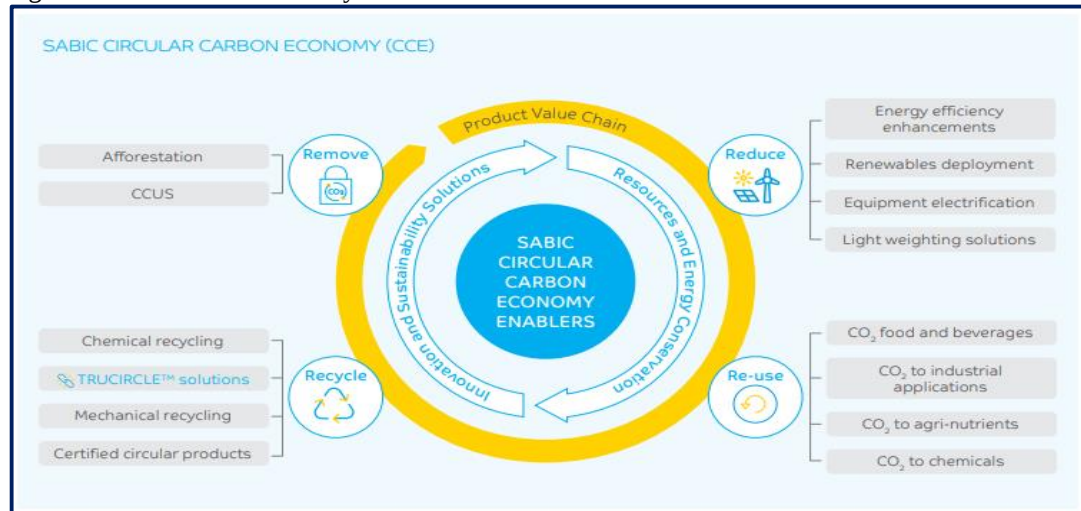
4.4. Environmental Strategy at SABIC

SABIC seeks to adopt responsible care principles, obligating it to conduct all its activities in a safe and stable environment while preserving natural resources and using them without waste or harm to the environment. This is achieved through commitment to the following elements:

- **Environmental and social practices disclosure:** SABIC is keen on disclosing all its environmental, social, and corporate governance practices, as these practices, although non-financial, have measurable financial consequences. Among the key disclosure steps the institution follows in this regard is issuing an annual sustainability report starting from 2011. (SABIC Sustainability Report, 2021, p. 17)
- **Saudi Energy Density Program:** The institution seeks continuous commitment to this program, collaborating with multiple virtual teams under the energy efficiency and carbon management unit to map out the roadmap. It offers multiple options that support achieving the state's 2025 goals for this program, which seeks to align with global directives in energy use and operational efficiency. (SABIC Sustainability Report, 2022, p. 44)
- **Circular economy:** The institution intensifies investment in the circular economy sector, focusing on using renewable and recyclable raw materials and designing durable, recyclable goods. It leads in plastic waste recycling and has collaborated with Microsoft to produce Microsoft mice from ocean plastic with an outer casing containing 20% recycled ocean plastic. It is also the first global chemical company to achieve the ECVUL2809 marine plastic certification for recycled content in China. (SABIC Sustainability Report, 2021, p. 16)

The institution believes that recycling extends to its commitment to carbon neutrality, where it adopts new processes and technologies to achieve a carbon circular economy.

Fig.2. Carbon Circular Economy for SABIC



Source: (SABIC's Annual Report, 2023, p. 41)

SABIC focuses on establishing a circular system where all value chains revolve around it. In order to develop a circular carbon system, it worked on creating and enhancing a strategy that includes a set of innovative solutions focusing on four key elements: (Saudi Basic Industries Corporation, 2024)

- **Reduction:** This includes reducing the amount of carbon generated and emitted into the air, in addition to integrating renewable energy generation into the company's operations and activities and reducing electricity consumption.
- **Recapture:** This involves capturing emitted gases into the air and integrating them into carbon products in their liquid and solid forms. SABIC is the first company in the Middle East to produce circular methanol derived from captured and purified carbon dioxide.
- **Recycling:** This refers to reusing or recycling, whether chemically, mechanically, or otherwise, to reduce the burning of plastic materials and environmentally impacted waste.
- **Disposal:** The company seeks to find effective ways to dispose of carbon dioxide, and one of SABIC's subsidiaries has established the world's largest station for capturing and purifying carbon dioxide.
- **Waste Management:** SABIC applies very strict principles in managing its waste, seeing sustainable waste management and transitioning to a circular economy as fundamental elements to reduce the company's environmental footprint. It commits to specific and regulated conditions during waste separation, packaging, transportation, and storage. It also focuses on precise and organized monitoring of external waste management facilities to ensure proper waste management. SABIC focuses on waste reduction programs to minimize the company's waste generation, constantly seeking options to dispose of, or reduce toxicity, reuse, recycle, and recover waste. Additionally, it focuses on separating waste-related data from material waste loss as part of its efforts to improve environmental disclosure processes.

4.5. Environmental Objectives for SABIC

Among the key environmental objectives that SABIC's environmental management aims to achieve during the period 2010-2025 are as follows: (SABIC Sustainability Report, 2022, p. 43)

- Reduce energy consumption by 25%
- Reduce resource waste by 50%
- Reduce water consumption by 25%
- Reduce greenhouse gas intensity by 25%

4.6. Analyzing Some of SABIC's Environmental Performance Indicators

This section of the study will analyze some of SABIC's environmental performance indicators, focusing more on intensity rather than quantity, as this intensity represents the indicator's value relative to sales value. This is because the quantity value of the indicator is influenced by increased or decreased production operations, which may not always indicate environmental performance.

4.6.1. Greenhouse Gas Emissions Indicators

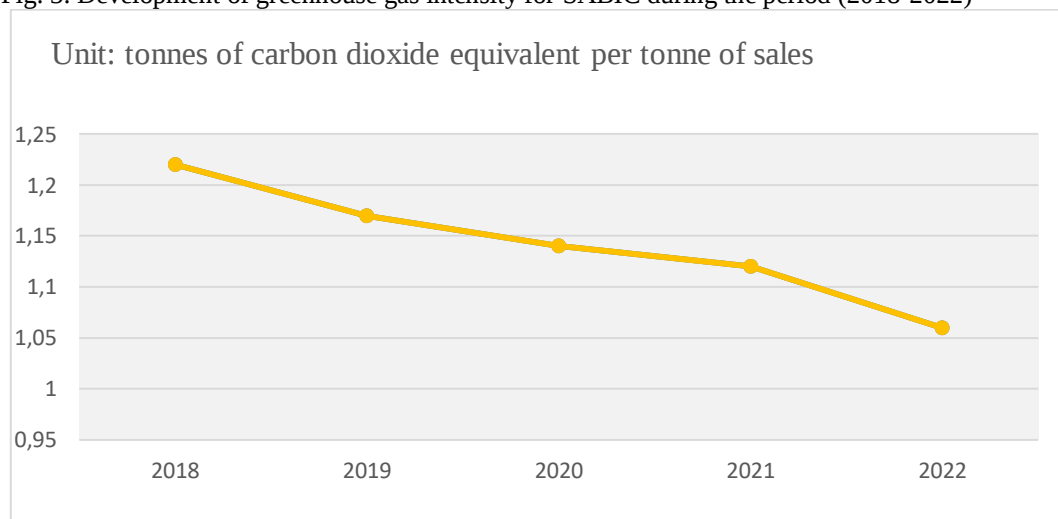
– **Greenhouse gas intensity:** This intensity represents the absolute quantity of greenhouse gases relative to sales quantity per ton. The following table shows the development of this intensity during the period 2018-2022, with carbon dioxide chosen for the study among greenhouse gases.

Table 2. Development of Greenhouse Gas Intensity for SABIC during the period (2018-2022)

Year	2018	2019	2020	2021	2022
The greenhouse gas intensity (tonnes of carbon dioxide equivalent per tonne of sales)	1.22	1.17	1.14	1.12	1.06

Source: (SABIC Sustainability Report, 2022, p. 23)

Fig. 3. Development of greenhouse gas intensity for SABIC during the period (2018-2022)



Source: Compiled by researchers based on the previous table.

Through Figure No. (03), a continuous decrease in greenhouse gas intensity is observed during the period 2018-2022, by 13%, from 1.22 (tonnes of carbon dioxide equivalent per tonne of sales) to 1.06 (tonnes of carbon dioxide equivalent per tonne of sales). This decrease is attributed to the adoption and implementation of an effective and integrated environmental

strategy by the organization, aiming to achieve carbon neutrality (zero emissions of carbon dioxide) by the year 2050.

Among the short-term environmental goals that the organization aims to achieve is a 25% reduction in greenhouse gas intensity by the year 2025, considering the year 2010 as the baseline year. According to the Sustainability Report for the year 2022, the organization has achieved 87% of this goal, with a reduction in greenhouse gas intensity reaching 21.8%.

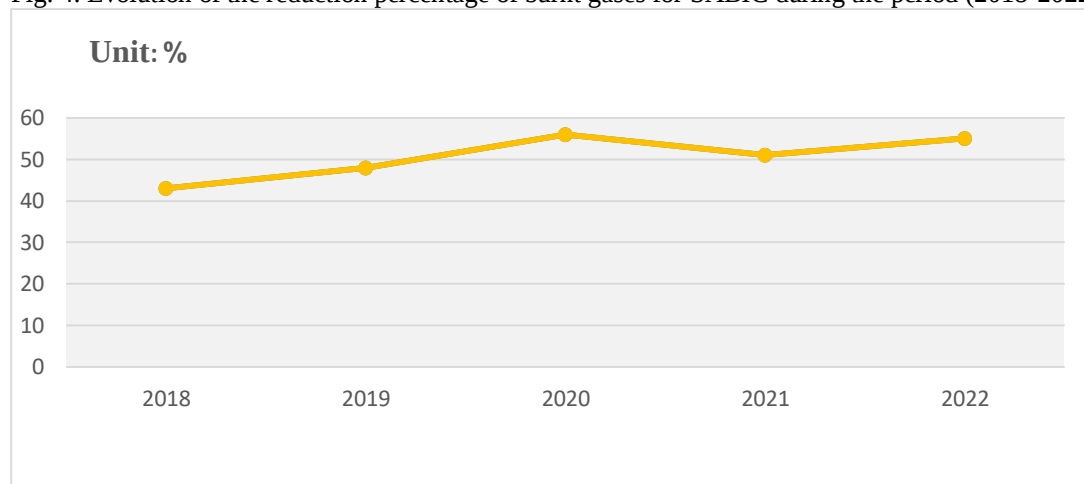
– **Percentage reduction in burnt gases:** This represents the percentage reduction in the amount of gases emitted, based on the year 2010 as the baseline year. The following table illustrates the development of this percentage for the period 2018-2022.

Table 3. Development of the percentage reduction in burnt gases for SABIC during the period (2018-2022)

Year	2018	2019	2020	2021	2022
Percent (%)	43	48	56	51	55

Source: (SABIC Sustainability Report, 2022, p. 23)

Fig. 4. Evolution of the reduction percentage of burnt gases for SABIC during the period (2018-2022)



Source: Prepared by researchers based on the previous table.

Figure Number (04) shows the evolution of the reduction percentage of burned gases, taking 2010 as the base year. It indicates a 5% increase in the reduction rate in 2019, from 43% to 48%. However, in 2020, this rate increased to 56%, only to decrease in 2021 to 51%, as the organization was unable to continue raising this rate in 2021 due to the operation of the Gulf Coast Development Project in San Patricio County, Texas, causing it to rise again in 2022 to reach a reduction rate of 55%.

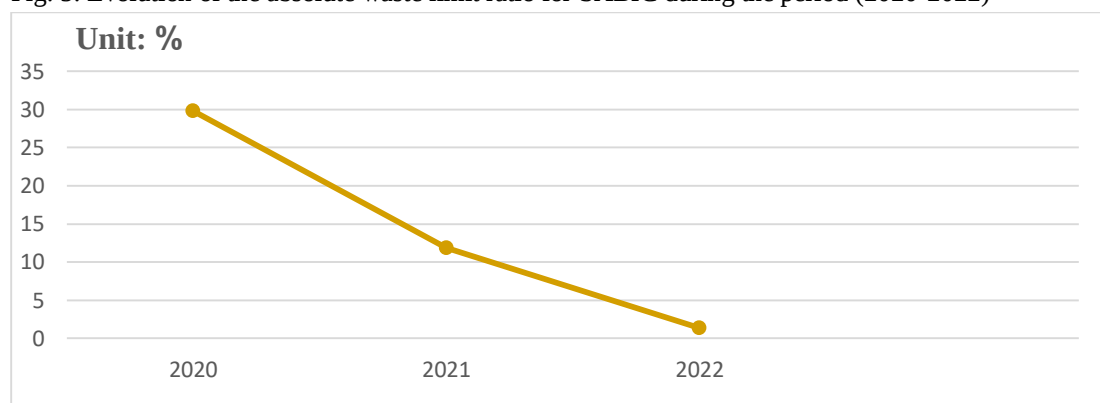
– **The absolute waste limit ratio:** This indicator represents the percentage of absolute waste based on the year 2010 as the base year.

Table 4. Absolute waste limit ratio for SABIC during the period (2020-2022)

Year	2020	2021	2022
Percent (%)	29.8	11.9	1.4

Source: (SABIC Sustainability Report, 2022, p. 23)

Fig. 5. Evolution of the absolute waste limit ratio for SABIC during the period (2020-2022)



Source: Prepared by researchers based on the previous table

Figure Number (05) illustrates a significant and substantial decrease in the absolute waste limit ratio, considering 2010 as the base year. This ratio was 29.8% in 2020, decreasing to 11.9% and then to 1.4% in 2021 and 2022 respectively. The reason for this noticeable and significant decrease is attributed to the strict waste management principles adopted by the organization. SABIC recognizes that sustainable waste management and a shift towards a circular economy are fundamental elements in reducing environmental impact.

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4.6.2. Resources and Energy Indicators

These indicators encompass a range of elements, including:

– **Energy consumption density:** The following table illustrates the development of energy consumption density values for SABIC during the period (2018-2022).

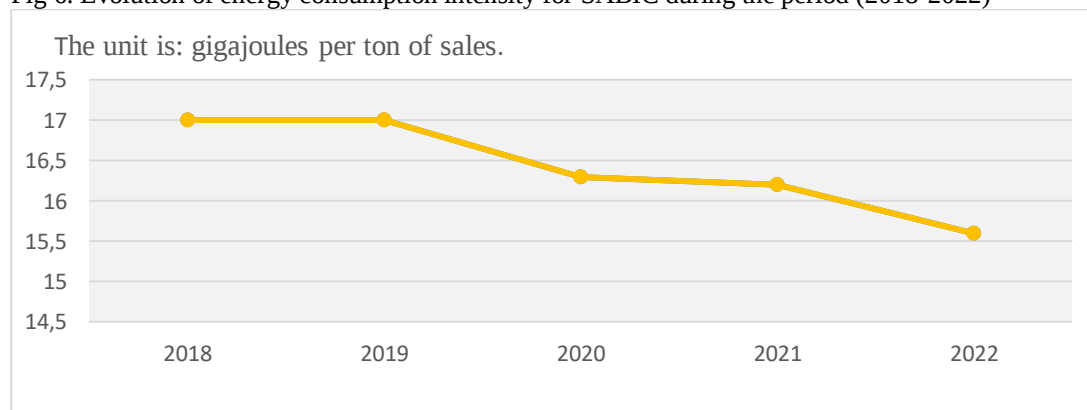
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Table 5. Energy consumption density for SABIC during the period (2018-2022)

Year	2018	2019	2020	2021	2022
Energy consumption intensity (gigajoules per ton of sales)	17	17	16.3	16.2	15.6

Source: (SABIC Sustainability Report, 2022, p. 23)

Fig 6. Evolution of energy consumption intensity for SABIC during the period (2018-2022)



Source: Compiled by researchers based on the previous table.

Through Figure 05, stability in energy consumption density is evident from 2018 to 2019, with a value of 17 gigajoules per ton of sales, which then decreased to 16.3 gigajoules

per ton of sales in 2020, representing a 4% decrease, followed by decreases of 0.6% and 4% for two consecutive years.

Comparing this with SABIC's main goal of reducing energy consumption by 25% by 2025 based on a 2010 baseline, the achieved reduction is 58.4% of this goal, achieved by reducing consumption density by 14.6% (as stated in the 2022 Sustainability Report). When comparing this percentage with the years specified for this goal, the company is still far from achieving this objective.

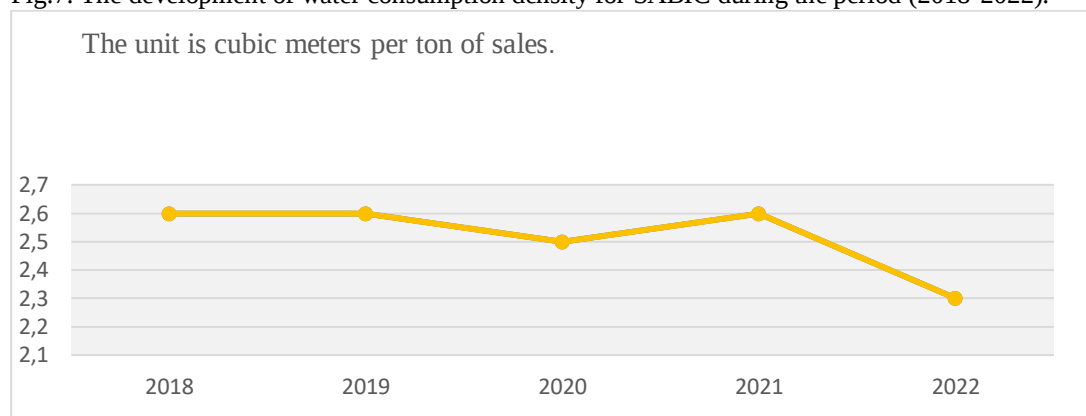
– **Water Consumption:** The following figure illustrates the development of water consumption density for the period 2018-2022.

Table 6. Water consumption density for SABIC during the period (2018-2022).

Year	2018	2019	2020	2021	2022
Water consumption density is measured in cubic meters per ton of sales.	2.6	2.6	2.5	2.6	2.3

Source: (SABIC Sustainability Report, 2022, p. 23)

Fig.7. The development of water consumption density for SABIC during the period (2018-2022).



Source: compiled by researchers based on the previous table.

Figure 07 shows the development of water consumption intensity for SABIC during the period 2018-2022. It indicates stability in water consumption intensity for the first year of the study, followed by a 4% decrease from 2.6 cubic meters per ton of sales to 2.5 cubic meters per ton of sales in 2020. In 2021, water consumption intensity increased by the same percentage as the previous year's decrease, only to decrease again in 2022 by 11.5%. SABIC considers water conservation as one of its key sustainability objectives.

The company continuously researches and explores modern technologies to preserve natural resources, while ensuring minimal environmental impact from water consumption through various core processes. These processes include ensuring operational quality and compliance through continuous monitoring and reliable reporting, optimal and maximum use of water periodically, and reusing water by supporting sustainable water initiatives.

Regarding the water consumption index, SABIC aims to achieve a 25% reduction in consumption intensity by 2025, considering 2010 as the base year. According to the Sustainability Report for the year 2022, SABIC has achieved a reduction rate of 22.4, which is 89.6% of this target.

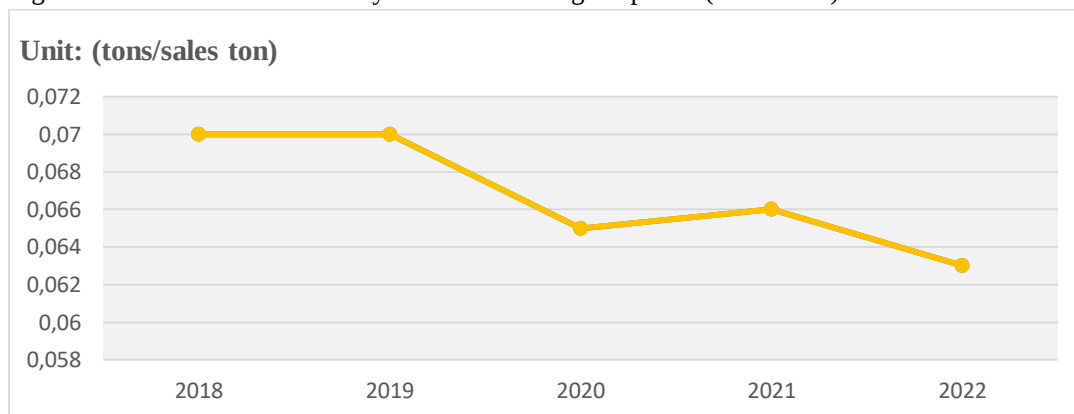
– **Resource wastage intensity:** is explained in the following table during the period 2018-2022:

Table 7. Resource Wastage Intensity for SABIC during the period (2018-2022)

Year	2018	2019	2020	2021	2022
Waste Intensity: (tons/sales ton)	0.70	0.70	0.65	0.66	0.63

Source: (SABIC Sustainability Report, 2022, p. 23)

Fig.8. Evolution of Waste Intensity for SABIC during the period (2018-2022)



Source: prepared by researchers based on the previous table.

Figure Number (07) illustrates the evolution of resource waste intensity for SABIC during the period 2018-2022. It shows stability in this intensity during the first two years, followed by a 7% decrease in the subsequent year. In 2021, resource waste intensity slightly increased from 0.065 (tons/sales ton) to 0.066 (tons/sales ton), then decreased by 4.54% in 2022.

The organization's goal regarding resource waste intensity is to reduce it by 50% by 2025, considering 2010 as the base year. According to the Sustainability Report for 2022, the organization has achieved 96% of this goal, with a reduction rate of 48.6% in waste intensity.

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5. Conclusion

This study highlighted the importance and role of environmental management in improving environmental performance, which is an essential and effective part of overall corporate management. It is an integrated system of structures and mechanisms aimed at developing and controlling plans and policies that monitor, evaluate, and enhance the environmental impacts resulting from corporate activities. Therefore, the environmental performance of economic institutions is a reflection of the level of efforts exerted by environmental management. Effective environmental management always seeks continuous improvement in environmental performance by striving to reduce the negative impacts of corporate activities on the environment and supporting the conservation and sustainability of natural resources.

This study also presented the reality of environmental management and environmental performance of Saudi Basic Industries Corporation (SABIC), where this organization possesses a contemporary and effective environmental management that gives great importance to circular economy and considers achieving carbon neutrality as one of its key environmental goals. This study also demonstrated the significant role played by environmental management in improving environmental performance, noting that the continuous improvement observed in most environmental performance indicators was based on well-defined plans and objectives set by environmental management with precision.

6. References

- 1) Al-Azzawi, N., & Hakma, A. (2018). *Environmental Management Strategies, Requirements, and Applications*. Amman, Jordan: Al-Yazouri Scientific Publishing and Distribution House.

- 2) Al-Kafi, M. Y. (2014). *Environmental Economics and Globalization*. Damascus: Dar Reslan for Printing, Publishing, and Distribution.
- 3) Al-Muqaddadi, K. (2016). *Marine Environmental Protection*. Amman, Jordan: Academic Bookstore.
- 4) Al-Sheikh, D. (2009-2010). Analysis of Theoretical Foundations of Performance Concept. *Al-Bahith Journal*, 07, 2018.
- 5) Ammarah, S., & Naima, P. (2018). Environmental Performance as a Modern Approach to Acquiring Competitive Advantages for Industrial Institutions - Nokia Company as a Model. *Economics of Money and Business Journal*, 06.
- 6) Huhtat, A.-S. (2013-2014). The Impact of Environmental Performance on Improving the Image of Economic Institutions: A Case Study of the National Well Services Institution (ENSP) in Hassi Messaoud and Ouargla. *Master's Thesis, University of Algiers 03, Faculty of Economic Sciences, Tarbiya Sciences, and Management Sciences, Management Sciences Department, Algeria*.
- 7) Khawaja, A.-H. S. A., Refai, R. I., & Saad, G. K. (2022). Integrated Environmental Management of Solid Waste for Achieving Comprehensive Development in New Urban Communities. *Environmental Studies and Research Journal*, 12(02).
- 8) Mahjoubi, N. E. H., & Mekhlafi, A. (2016). Environmental Performance Assessment in Oil Institutions: A Case Study of "Hawad Berkawi" Oil Complex. *Algerian Journal of Economic Development*, 05.
- 9) Maqimah, S. (2019). Evaluation of Environmental Performance in Business Organizations Using Sustainable Balanced Scorecard - Case Study of the National Road Works Company. *Journal of Economics and Finance*, 05(02).

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- 10) Mekhlafi, A., Mahjoubi, N. E. H., & Ismail, B. K. (2016). Measurement of Environmental Performance Indicators in the Raw Processing Unit South "UTBS" Sonatrach Hassi Messaoud during the Period (2011-2016). *Journal of Economics and Business*, 05(01).
- 11) Mellayika, A., & Zohra, T. F. (2021). The Reality of Environmental Management in Algerian Industrial Institutions - Field Study of a Sample of Economic Institutions in Eastern Algeria. *Journal of Creativity*, 11(02).
- 12) Sabic. (2021). *Sabic's Annual Report*. Riyadh: Sabic.
- 13) Sabic. (2022). *Sabic's Annual Report*. Riyadh: Sabic.
- 14) Sabic. (2023). *Sabic's Annual Report*. Riyadh: Sabic.
- 15) Sabic. (2021). *Sabic's Sustainability Report*. Riyadh: Sabic.
- 16) Saudi Basic Industries Corporation (Sabic). (2024, March 15). Sabic: [Link to the website] <https://www.sabic.com/ar>.
- 17) Shiraz, M. K. (n.d.). *Environmental Management Systems*. London: Academic Publishing, Printing, and Distribution House.
- 18) Sheraf, I. (2016-2017). The Impact of Environmental Management on the Efficiency of Industrial Projects - A Case Study of the Cement and Its Derivatives Company in Chlef (ECDE). *Doctoral Thesis, Mohamed Khider University, Faculty of Economic and Commercial Sciences and Management Sciences, Management Department, Algeria*.
- 19) Ti, A., Bali, H., & Aqaba, A. (2016). The Role of ISO14001 Environmental Management Systems in Improving Environmental Performance of Industrial Institutions. *Economic Development Journal*, 02.
- 20) Zahzani, R., & Marzouki, M. (2019). Performance Measurement and Evaluation Indicators of Small and Medium-sized Enterprises' Environmental Performance and Its Accounting Implications. *Economic Fields Journal*, 02(01).