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A Proposed Program to Audit the Effects of Indirect Emissions According to the Standard of Assurance Correlations (3410) on the Environment

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Abstract

Global warming is one of the phenomena that affect the environment as a result of greenhouse gases, as indirect emissions represent 80% of the total global emissions, so organizations and professional councils, including the ISO Organization and the Council of the Accounting and Auditing Profession, sought to issue a standard of confirmation links by issuing a standard (3410) to provide guidance to the auditor when auditing the effects of indirect emissions on the environment, so the research sought To identify the standard of confirmation correlations (3410), environmental effects and their elements, relevant laws and instructions and international agreements to which Iraq has joined, then prepare a proposed program to audit the environmental effects of greenhouse gases for indirect emissions of the two bands (3 and 2) according to the standard of confirmation correlations 3410, which contributes to determining the effectsof emissions to reduceEnvironmental impacts such as high temperatures and human health The research problem is the lack of an audit program for the effects of indirect emissions according to the standard of confirmation correlations (3410) on the environment, the research is based on the premise that the proposal of an audit program for the effects of indirect emissions contributes to determining the effects of those emissions on the environment from pollution and climate change and adopted theSecond on the laws, regulations, instructions and agreements related to the subject of research and ISO standards The research has reached a set of conclusions, the most important of which is that the federal financial control debt program did not include did not take into account the standard of linkages (3410) The most important recommendations that the proposed program contributes to determining the environmental effects and thus contribute to its reduction.

Keywords: *Audit Program, Indirect Emissions Greenhouse Gases.*

Introduction

Developing an audit program for greenhouse gases (carbon dioxide, methane, nitrous oxide), especially those related to indirect emissions, is vital in order to provide accurate and reliable data. These data are considered to be one of the primary pillars in the process of developing effective strategies to reduce the environmental impacts of pollution and achieve the goals of the Paris Agreement to limit global warming. A particular emphasis was placed on indirect emissions, where band (2) emissions represent 25% of the total global emissions and band (3) emissions represent 55% of the total global emissions, resulting in a total of 80% for the two bands according to the data of the United Nations Framework Convention (UNFCCC), in comparison to direct emissions Scope (1), which only account for 20% of the total. Through this research, we aim to motivate all stakeholders to actively participate in reducing indirect emissions and highlight actions and practices that can contribute to enhancing environmental transparency and thus addressing the major environmental challenges that loom in the future.

The first section is research methodology and previous studies

1-1- Research Methodology

1.1.1 The research problem is the following question:

Is there a program for auditing greenhouse gases for indirect emissions with the authorities concerned with control and auditing in accordance with the standard of confirmation associations 3410 under which the environmental impacts of these emissions are monitored?

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Research Objectives

The research aims to:

Identify the theoretical framework of greenhouse gases for indirect emissions and their effects on the environment

Identify the relevant legislation and regulations pertaining to the study issue, as well as the international conventions to which Iraq is a signatory.

Review of the most important observations of the Federal Financial Audit Office related to the research

Preparing a proposed program for auditing greenhouse gases for indirect emissions according to the standard of confirmation correlations (3410) and their impact on the environment.

The Importance of Research

The importance of the research stems from the importance of preserving the environment from pollution and climate change by drawing the attention of interested and responsible to the environmental effects caused by indirect emissions of the two bands (3 and 2).

Research Hypothesis: The research is based on the premise that the proposed audit program to audit the effects of indirect emissions on the environment contributes to identifying the sources of indirect emissions according to the two bands (3 and 2) and identifying the sectors (activities) most emitting and, consequently, the degree of dedication of the relevant authorities to mitigate indirect emissions in order to mitigate environmental consequences.

*Research Tools*_Reliance was placed on International Standards for Auditing, Examination and Other Confirmations, World Meteorological Organization, Instructions and Data of the (UNFCCC), Instructions of the (IPCC), (WBG), Paris Agreement and Kyoto Protocol Greenhouse Gas Protocol, (GGRI) (ISO) Standards, Local Accounting Rule No. (6).

Research Methodology

The inductive technique was utilized based on sources, alongside the descriptive and analytical approach in the practical dimension.

Previous Research

Research (Hamdan, 2010) entitled "Control of Supreme Audit Institutions on solid waste management" The research dealt with the concept of solid waste, its sources, risks and stages of management, and also dealt with international conventions and some of the experiences of countries in this field in the theoretical framework of the research, and in the applied aspect the research dealt with the experience of the National Audit Office in Iraq in environmental control, And the results of the environmental survey of municipal services prepared by the Central Agency for Statistics and Information Technology, and the researcher presented a draft audit program for solid waste management, and the research ended with a set of conclusions as the Ministry of Environment Law No. (37) of 2008 did not indicate granting incentives to the authorities to reduce the volume of waste generated or the use of necessary materials only, and one of the most important recommendations The need to include in the environmental law penalties to be implemented against violators of the conditions of environmental protection, and to hold those concerned with environmental protection accountable, the need to regulate a law or instructions for the management of benign and hazardous solid waste.

Research (J. Trotman, T. Trotman, 2015) entitled "Internal Audit's Role in GHG Emissions and Energy Reporting: Evidence from Audit Committees, Senior Accountants, and Internal Auditors"

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"The Role of Internal Audit in Reporting on Greenhouse Gas and Energy Emissions: Evidence from Audit Committees, Senior Accountants and Internal Auditors" Investigating the responsibilities that audit and management committees, internal auditors, external auditors, and other stakeholders play in connection to disclosures concerning global greenhouse gas emissions and large energy usage was the focus of the research that was carried out on a global scale. Trends that favor greater sustainability reporting, increased concerns about climate change, and the implementation of new regulations and taxation at the same time all contributed to the initiation of this inquiry. In addition to shedding light on the aspects that shed light on the role of internal audit and the role that internal audit will play in the future, the findings throw light on the current function that internal auditors play in the reporting of greenhouse gas emissions and energy consumption. It would be beneficial to have a list of the individuals who are now contributing to the compilation of reports on energy and greenhouse gas emissions, as well as a description of the individuals who are members of the audit committee.

Research (Jassim, Hamdan, 2016) entitled "A proposed model for auditing health institutions to achieve sustainable development" The study addressed the absence of an audit program that guarantees the auditing of financial statements, compliance, and performance of health services to fulfill sustainable development objectives. The research aimed to propose an audit program that incorporates the auditing of financial statements, compliance, and performance evaluation in alignment with the dimensions of sustainable development (economic and social). The researchers arrived at several conclusions, the most significant being that the Federal Financial Audit Office's program lacked indicators, objectives, and principles of sustainable development for health institutions across various audit types (financial, commitment, and performance). They also provided a series of recommendations, particularly advocating for the implementation of the proposed model for the audit program of financial health institutions and adherence to the dimensions of sustainable development (economic and social). Integrating environmental and institutional factors to assess advancements in health service delivery and pinpoint barriers to achieving developmental objectives and targets.

Research (Abdulkarim, Hamdan, 2017) entitled "Environmental Control of the Extractive Oil Industry" The research aims to prepare a report by the external auditor (Federal Financial Supervision Bureau) on environmental control that includes financial control, compliance and performance of the North Oil Company (extractive) according to the causes of pollution, the researchers reached a set of conclusions, the most prominent of which are The company conducts programs (plan) for the maintenance of environmental assets, an increase in the amount of oil exuding from the pipelines, the company's lack of official sites for landfilling industrial waste, contrary to the laws in force, as well as inaccuracy in determining the (planned) need for the necessary supplies of cars andmechanisms, industrial security requirements, and the lack of specialized staff in the environmental field.

Research (Hussein, Hamdan, 2024) entitled "Audit of the management of proposed greenhouse gas emissions according to the international assurance correlation standard 3410 to reduce the effects of climate change / applied research (Middle Refineries Company / Dora Refinery)" The research indicated noncompliance with pertinent laws, regulations, directives, and international agreements, as well as the absence of auditing procedures for greenhouse gas emissions within the Federal Financial Supervision Office. The researchers identified these as the principal recommendations. The necessity to comply with environmental laws, rules, directives, and international treaties. Adherence to the sustainable development goals, particularly Goal 13 (urgent measures to combat climate change and its impacts), is essential, alongside the implementation of the proposed audit procedures aimed at regulating gas emissions and mitigating the effects of climate change.

Research (Hussein, Hamdan, 2024) entitled "A proposed audit program for greenhouse lists according to the international assurance correlation criterion 3410 to reduce the effects of climate change" The research aims to propose and evaluate greenhouse lists in alignment with the international assurance correlation standard 3410 to mitigate climate change impacts. Additionally, it seeks to develop a proposed audit program for greenhouse lists that aids auditors in verifying the commitment of relevant authorities to reducing greenhouse gas emissions. The two researchers have arrived at a number of conclusions, one of which is that there is no audit program for greenhouse lists that is in conformity with

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standard 3410 in order to reduce the consequences of climate change. The primary recommendation is the establishment of the suggested audit program for greenhouse lists.

The second section is the theoretical framework of indirect greenhouse gas emissions and environmental impacts

Emissions

They are greenhouse gases released into the atmosphere during the specified timeframe or that would have been emitted had they not been caught and redirected to a designated basin (International Federation of Accountants, 2023: 1190), and emissions are a group of pollutants, including carbon dioxide, methane, nitrous dioxide and black carbon, which contribute significantly to atmospheric pollution (Mukherjee, 2020:13).

Indirect Emissions

The emissions that are attributable to the manufacturing and use of various goods and services (Ryan & et.al,2021:1, characterized as emissions resulting from electricity acquired and utilized by FAO. Emissions are produced during the generation of this energy and are utilized by the plant permanently. The estimation of these emissions is centered on power demand and private usage due to data availability constraints (Fallahi & et.al, 2018: 151), defined by Greenhouse Gas Protocol- Community Scale, 2021:35):

The emissions of greenhouse gases that are produced as a result of the use of the grid's supply of electricity, heat, steam, and cooling inside the boundaries of the city are regarded to be within the city limits. These emissions are produced through the use of the grid. It is also considered that these emissions are located within the boundaries of the city.

Indirect Emissions Shall Be Classified into Emissions of Scope (2) And Scope (3).

According to the Greenhouse Gas Protocol (Corporate Accounting and Reporting Standard) includes:

First: Scope 2 Emissions Indirect energy emissions are produced off-site and utilized by the reporting entity, including electricity, steam, heat, or refrigeration. For instance, electricity procured from an external utility is classified as indirect emissions. At least one-third of the overall emissions of greenhouse gases are accounted for by Scope 2 emissions, making them the most significant contributor to global greenhouse gas emissions globally. As a consequence of this, evaluating and quantifying Scope 2 emissions presents a considerable opportunity for the reduction of emissions.

(GHG Protocol-A Corporate Accounting and Reporting Standard, 2004, 25)

Second: Scope 3 Emissions The Environmental Protection Agency (EPA) of the United States of America refers to Scope 3 emissions as "the result of activities from assets that are not owned or controlled by the reporting company or organization but that indirectly affect the organization in its value chain." Scope 3 emissions are defined as "the result of activities from assets that are not owned or controlled by the organization."

Indirect emissions include, among other things, carbon dioxide emissions
Emissions associated with employee travel for work, outsourced activities, fossil fuel or electricity consumption required for facility operations, extraction and production of materials procured as inputs for facility operations, and transportation of purchased fuel (IFAC, 2023: 1190-1209).

Greenhouse gas emissions generated due to the use of manufactured products and limited to sector-specific activities and/or products as classified in the (Global industry classification standard) GICS, and

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air travel (civil aviation), mobility and all other emissions associated with transportation are reported within the transport sector (SVEN & ET.AL,2022:316).

Corporate Value Chain Emissions (Scope 3)

In accordance with the financial transactions of the reporting entity, the Greenhouse Gas Protocol-Value Chain classifies Scope 3 emissions into the following categories: emissions that occur in the initial stage and emissions that occur in the final stage:

Upstream Emissions

Indirect greenhouse gas emissions that take place within the value chain of the firm are included in the category of upstream emissions, which is an important point to acknowledge. These emissions include:

Activities pertaining to fuel and energy, upstream transportation and distribution, procurement of products and services, capital goods, operational waste, business travel, staff mobility, and upstream leased assets.

Downstream Emissions

The term "downstream emissions" refers to the indirect greenhouse gas emissions that are associated with the sale of products and services that are emitted after they have left the ownership or control of a company:

Leased assets, concessions, investments, transmission and distribution, processing of sold products, utilization of sold products, and processing of items after the conclusion of their useful life.

(GHG Protocol-Corporate Value Chain (Scope 3), 2011, 36-56)

Scope (3) also includes emissions from waste and their treatment by landfill, which is the most common method, which affects soil quality according to the duration of decomposition of this waste (Hussain & alameen, 2019:7305).

Measurement of Indirect Emissions

Some greenhouse gas assessments or reports only include CO2, and do not take into account other greenhouse gases, and this may reduce the overall global warming impact and the inventory of greenhouse gases is more complete if it includes all greenhouse gases, not just carbon dioxide, so it is measured in CO2e equivalent. A unit of measurement to represent gas emissions in a uniform way and convert all greenhouse gases to CO2e equivalent according to the ability of each gas to retain heat compared to CO2 at a certain point in time and the reasons for using the equivalent:

For ease of measurement, reporting, control and documentation, standardization, simplification and comparison of gases, ease of understanding and planning to improve environmental performance and making decisions on measures to reduce emissions and fines, the multiplicity of greenhouse gases, reference in international agreements (Brander & Davis, 2023:1-3), these gases measured in equivalent remain in the atmosphere for different periods and in different proportions as well.

Table (1). The Period of Stay of Gases in The Atmosphere and The Percentage of Each Gas

Types	Percentage of each gas	Atmospheric stay period
CO2 carbon dioxide	76.62% – 80.20%	Multiple
Nitrous oxide N2O	14.05% - 11.76%	116 + - 9 years
Methane CH4	6.39% - 5.41%	9.1 + - 0.9 years

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Table prepared by the authors based on (Summary of GHG Emissions, 2021: 2)

There are multiple values until the effect of carbon dioxide is eliminated:

First: Rapid operations on land and oceans at intervals ranging from minutes to years, such as photosynthesis, soil respiration, and flows between air and sea (air–sea fluxes)

Second: Slower operations that take from decades to thousands of years:

Changing ocean buffering, which is the ability of the oceans to absorb and conserve gases without significantly changing their acidity or chemical composition.

Ocean ventilation: The process of mixing oxygen-rich surface water with deep ocean waters, which contributes to regulating the temperature of the ocean and cleaning its carbon dioxide content.

Vegetation dynamics: Changes in vegetation cover (trees and plants) on Earth over time, where they play an important role in the carbon cycle on Earth.

(IPCC WGI The Physical Science Basis, 2021: 681-709)

Greenhouse Gas Inventory Methodologies for Indirect Emissions

Greenhouse gas inventories are conducted using different methodologies to accurately determine greenhouse gas emissions and removals. These methodologies typically include a mix of bottom-up and top-down approaches, each with its own strengths and limitations. (World Meteorological Organization, 2023:12)

Top-Down Approach

Atmospheric measurements: Top-down approaches involve measuring greenhouse gas concentrations in the atmosphere and using atmospheric models to infer emissions on the surface. This approach makes use of atmospheric transport models and reverse modelling techniques to estimate emissions from regional or global scales. Atmospheric measurements provide independent verification of emissions but may be subject to uncertainties related to atmospheric transport and modelling assumptions. (Tingzhen,2023:4)

Modeling techniques: Top-down modeling techniques use mathematical models to simulate emissions from different sources based on input data such as economic activity, energy consumption and land use. These models can provide clear spatial and temporal estimates of emissions but require strong input data and assumptions about emission processes and drivers. (Rubén & Sofía,2022:3371)

Environmental Effects, Definition and Elements

Definition of the Environment

It is not just a physical space but a complex unit of elements, including natural resources, human activities and legal frameworks (Enrico, 2023: 249-256)

Arvin & et.al, 2021:283 has been defined as encompassing all elements in space that affect the survival and well-being of humans and other living organisms. It includes human resources, conditions and activities, emphasizing the need for environmental law.

First: Elements of the environment: water, air, soil and living organisms.

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Environmental pollutants: Any solid, liquid, or gaseous pollutants, as well as noise, vibrations, radiation, heat, light, or similar variables, including biological elements, that directly or indirectly contribute to environmental pollution.

(Iraqi Environmental Protection and Improvement Law No. 27 of 2009)

Indirect Effects of Greenhouse Gases on The Environment

Indirect emissions lead to increasing global warming leading to rising temperature levels, rising sea levels, strong storms in coastal areas, disruption of water resources for drinking and agriculture, It has also resulted in an increase in drought, rainfall, floods, and forest fires, which pose a significant hazard to the environment of all living organisms on Earth. Additionally, it has caused changes in biodiversity, plant distribution, and soil moisture (Ehsanullah, 2020:1-2), Additionally, the rates of air pollution have increased as a consequence of the proliferation of sources that burn fuel, the exhaust from automobiles, electric power generators, and other industrial activities (waheeb, 2023:3) The accumulation of these indirect emissions, especially carbon dioxide, has adverse effects on the global climate, causing global warming and climate change .S.A., 2014:2) The environment significantly affects human health through various factors such as air and water pollution, leading to diseases and health problems and contributing to human activities including indirect greenhouse gas emissions (3) and exposing individuals to hazardous chemicals that can affect health, in addition to the importance of understanding how environmental factors affect health outcomes due to industrial activities and their effects on water, air, soil quality, ecosystems, flora and fauna, This poses short- and long-term health risks. Therefore, maintaining a healthy and sustainable environment is critical to reducing morbidity and mortality rates and promoting overall well-being among populations worldwide (Freddy,2023:787), owing to the fact that it was recently estimated that pollution was the cause of 9 million premature deaths in 2015, making it the most significant environmental risk factor for disease and premature mortality in the globe (Virgínia & Diogo, 2022: vii), atmospheric air pollution is a global problem and the impact of atmospheric air polluted with carbon dioxide and other pollutants on the human being is a multifactorial process, as it is one of the main factors causing infection and mortality. According to WHO data, approximately 25% of mortality and injury is related to environmental factors, however, by maintaining a healthy environment 13 million lives can be saved (Ismail, Ziad Ali et al., 2019: 117). Polluted atmospheric air is harmful to humans, especially children, being the causative and complex agent of many acute and chronic diseases (Nino & George,2022:134), When it comes to the emissions that are classified as Scope 3, the emissions that are produced by the transportation sector and that accompany these emissions are referred to as fine or suspended particulate matter (PM). a mixture of solid particles and liquid droplets that are present in the air, such as dust, dirt, soot, or smoke, some of which are large or dark enough to be seen with the human eye, while others are too small to be seen with the naked eye, and still others are too minute to be seen at all. Also known as particulate matter. The only way to identify it is by the use of an electron microscope, similar to PM2.5 particles, which are fine particles that can be inhaled and have diameters that are typically less than 2.5 micrometers. To give you an idea, the average diameter of a human hair is approximately 70 micrometers, which is approximately 30 times larger than PM2.5 particles. Basics of Particulate Matter (PM) from the Environmental Protection Agency, 2024:274) Where the quality of the air was checked by monitoring emissions from fossil fuel generators located within the University of Technology in Iraq, as well as measuring and recording air pollutants (PM1, PM2.5, PM7, and PM10) (Ahmed et.la, 2020:279) these fine particles and emissions on the following:

Human Health

Premature mortality in individuals with cardiac or pulmonary conditions, nonfatal myocardial infarctions, arrhythmias, exacerbation of asthma, diminished pulmonary function, and heightened respiratory symptoms such as bronchial irritation, cough, or dyspnea, particularly affects children and the elderly. This is attributable to the emission of particulate matter less than 10 μm in diameter, with PM2.5 emissions correlating to a 7-9% rise in premature deaths.

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Ecosystems

These particles have the ability to be transported by winds over vast distances, and depending on the chemical composition of the particles, they can either settle on land or on water. Winds have the potential to move these particles. This stability may have a number of repercussions, some of which include the acidity of lakes and streams, the modification of the nutrient balance in coastal waters and big river basins, and the loss of nutrients in the soil (EPA Health and Environmental Effects of Particulate Matter (PM),2024:381). Additionally, this stabilization may cause damage to sensitive forests and crops, have an effect on ecosystem diversity, and contribute to the effects of acid rain. (Rahi & Faisal, 2019:1211).

Climate

In a report entitled "Greenhouse gas concentrations rose again to new record levels in 2023" published by the General Organization of Meteorology on 28 October 2024, the Deputy Secretary-General of the World Meteorological Organization, Dr. Coe Barrett, warned that due to the increase in greenhouse gas releases, she warned in the near future of the effects of emissions as follows:

Climate change itself may cause (gas-absorbing) ecosystems to become larger sources of greenhouse gases because:

Drought: One of the effects of greenhouse gases on the climate is drought and increased fires as wildfires release more carbon emissions into the atmosphere.

If oceans continue to warm, they may absorb less carbon dioxide. As a result, there is a possibility that more carbon dioxide may remain in the atmosphere, which could hasten the process of global warming. These reactive climate impacts are of grave concern to human society.

From 1990 to 2023, radioactive coercion – the impact of warming on our climate – caused by perennial greenhouse gases increased by 51.5%, with carbon dioxide contributing 81% of this increase.

Greenhouse gases continue to accumulate in the atmosphere, which is what leads to **rising global temperatures**. Given the extremely long period of carbon dioxide remaining in the atmosphere, the already observed temperature levels will continue for several decades even as net emissions are rapidly reduced to zero.

Melting ice and glaciers threatening the long-term water security of many millions of people

(World Meteorological Organization (WMO)

The third section is the 3410 Assurance Correlation Standard and International Auditing Standards Related to Emissions and the Environment

Confirmation correlations standard 3410 Confirmation correlations for greenhouse gas lists

Scope of This Standard

This standard addresses confirmation links for the reporting of the list of greenhouse gases.

The CPA's conclusion in the confirmation link may cover other information in addition to the list of greenhouse gases, for example, when the chartered accountant is associated with a report on a sustainability report in which the greenhouse gas population represents only one part. In such cases:

This standard applies to confirmation procedures that are carried out in connection to the list of greenhouse gases, with the exception of situations in which the list of greenhouse gases constitutes a relatively minor portion of the overall information that is subject to confirmation.

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The Assurance Links Standard (3000) (or other confirmation engagement criteria dealing with specific related topics) applies to confirmation procedures carried out in respect of the information covered by the Chartered Accountant's Conclusion.

This standard does not address or provide specific guidance for confirmation links related to reporting on:

Lists of emissions other than emissions from greenhouse gases, such as nitrogen oxides (NOx) and sulphur dioxide (SO2).

The "carbon footprint" of products throughout their life cycle, default "baseline" information, and key performance indicators based on emissions data are some examples of additional information that pertains to greenhouse gases.

Objectives

The objectives of a chartered accountant are to:

Obtain reasonable or limited assurance, as applicable, on the absence of major misstatement in the greenhouse gas list, whether arising from fraud or error, thereby allowing the chartered accountant to draw a conclusion in line with the assurance level obtained;

Compile a report based on the conclusions of the chartered accountant regarding:

In the event that reasonable assurance is related, whether the list of greenhouse gases is prepared, in all material respects, in accordance with for applicable controls; or

If the limited assurance pertains to the matter, and the chartered accountant has identified, through the procedures conducted and the evidence gathered, grounds to suspect that the greenhouse gas inventory is not prepared, in all material respects, in accordance with the applicable controls;

Reporting on other matters required by this standard, in accordance with the findings of the chartered accountant.

Relevant International Standards on Auditing

The international auditing standards described below are used with the International Assurance Link Standard 3410 as follows:

Table (2). Use of International Standards on Auditing and Standard 3410 in the Planning Phase

Number and name of the standard	Objective of the standard	According to Standard 3410
210 / Agreement on terms Audit links	- Acceptance of the link and continuation of it is done by verifying the availability of preconditions for auditing. - Ensure that there is a common understanding between the auditor on the one hand and the management and those in charge of governance on the other hand	10/ The chartered accountant must abide by the provisions of the International Code of Conduct and Ethics of the Profession.

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265/ Reporting deficiencies in internal control to those in charge of governance and administration		A5/ Independence: A chartered accountant may be threatened by adhering to independence requirements
300 / Planning for auditing financial statements	Planning an audit in order to carry out the audit process in an effective manner	16/ The partner responsible for the engagement shall be proficient in the skills and methods of confirmation, measurement and reporting of emissions.
315 / Recognizing the dangers Substantial misrepresentation and evaluation	Both at the level of the financial statements and at the level of the disclosure, the auditor's objective is to identify and evaluate the risks of considerable deception, regardless of whether the misrepresentation is the result of fraud or error.	17a / The partner responsible for the link must specify that both the list of greenhouse gasesand the correlation have sufficient scope for the benefit of the target users, the list of greenhouse gases excludes significant emissions that have been quantified.
320/ Materiality when planning an audit	The auditor intends to make appropriate use of the idea of materiality throughout the planning phase of the audit (also known as the planning phase).	25) The chartered accountant must reach an understanding of the following components of internal control in the enterprise related to measuring emissions: control environment, information system, enterprise mechanism for risk assessment, and control activities related to correlation.
520/ Analytical Procedures	Acquire suitable and dependable audit evidence while employing baseline analytical processes.	19/ The chartered accountant shall: take into account the factors that are important in guiding the efforts of the liaison team, verifying the nature of the resources required to implement the linkage and determining the impact of the internal control function on the linkage
530/Samples per audit	In order for the auditor to arrive at conclusions regarding the population from which the sample was obtained, it is necessary to establish a solid basis.	Factors such as the entity's institutional boundaries, operational operations, emissions, basins, and emission cuts, changes in operations from the previous period, uncertainties related to the quantities listed in the GA list of global warming, enterprise climate change strategy, and relevant economic, regulatory,

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		physical, and reputational risks have to be considered.

The table was prepared by the researchers based on (International Federation of Accountants, International Standards for Auditing and Examination and other assurances and related services).

Table (3). Use of International Standards on Auditing and Standard 3410 in the Implementation Phase

Number and name of the standard	Objective of the standard	According to Standard 3410
220 / Quality Control Auditing Financial Statements	- The auditor's work is in accordance with the standards that are generally accepted in the industry, all of the requirements that are applicable have been satisfied, and the report is acceptable in light of the conditions that are now occurring.	71/ Examination of the global warming list and the proposed confirmation report.
230/ documentation Audit Work	The auditor should provide sufficient paperwork to back up their findings, and they should also record the audit evidence that they have gathered throughout the auditing process.	- Examination of selected documents for linking
250 / Observing the rules and regulations when auditing the financial statements	Acquire adequate and relevant proof of adherence to generally accepted laws and regulations, execute and appropriately address specified audit procedures, and apply designated audit methods.	- As the auditor was putting together the report, you should evaluate the findings that they came to.
320/ Materiality when carrying out an audit	Apply the concept of materiality appropriately when implementing	65) When documenting the nature, timing and extent of the procedures carried out, the chartered accountant must record:
330/ Auditor's responses to assessed risk	Acquire adequate and relevant audit evidence regarding the assessed risks of material misrepresentation by formulating and executing suitable responses to mitigate those risks.	The distinctive characteristics of the items, who carried out the liaison work and the date of completion of these works, who examined the liaison work carried out and documented discussions on important issues with the facility and their timing.
450/ Correction of misrepresentations Detected during the audit	An analysis of the influence that the observed distortions had on the audit, as well as the impact that the non-distortions had on the audit	A107/ Providing a response to situations in which laws and regulations are not being followed or are being followed partially:

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	necessary adjustments to the financial accounts	
520/ Analytical wages	Formulate and execute analytical methods at the conclusion of the audit.	Withholding the confirmation report, withdrawing from the link if possible if the lack of obligation has a material impact on the global warming list
540/ Audit Grades Accounting and related disclosures	n order to examine the reasonableness of the accounting estimates and related disclosures in the financial statements in conformity with the applicable financial reporting framework, it is necessary to have audit evidence that is both sufficient and pertinent.	51a/ The relative importance may need to be reconsidered as circumstances change during the audit process through the nature, timing and extent of additional procedures.
580/ Written statements	Acquire written assertions from management and governance officials affirming their belief that they have met their obligations regarding the preparation of the financial statements and the comprehensiveness of the information supplied to the auditor.	35/ A chartered accountant is responsible for the development and execution of public responses to the risks of material misrepresentation, which are evaluated at the greenhouse gas list level. Additionally, they must establish procedures that address the risks of material distortion in terms of their nature, timing, and extent.
620/ Use the work of an expert hired Checker	a. Decide whether to employ the expertise of an expert appointed by the auditor. B. Assess whether the expert's work is adequate to warrant the audit.	37a/ Evaluate the specific rationale behind the evaluation of the risks of material misrepresentation at the declaration level in relation to the categories of emissions and disclosures of relative importance.

The table is prepared by the researchers based on (International Federation of Accountants, International Standards for Auditing and Examination and other assurances and related services)

Table (4). Use of International Standards on Auditing and Standard 3410 at the Reporting Stage

Number and name of the standard	Objective of the standard	According to Standard 3410
265/ Reporting deficiencies in internal control to taxpayers Governance and Management	It is important to inform those who are responsible for governance and management about the inadequacies in the internal control that were discovered during the	78/ The chartered accountant is obligated to inform the person who is responsible for the review of the GA list of global warming of any deficiencies in internal control that, in the professional accountant's opinion, are of sufficient significance to warrant attention, unless

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	audit. As far as the auditor's professional judgment is concerned, these inadequacies are of sufficient significance to require the attention of each and every one of them.	the professional accountant is prohibited from doing so by law or regulation.
520/520 Analytical Procedures	Obtaining sufficient audit evidence to support the auditor's conclusions and judgments in forming his opinion	tain sufficient audit evidence to support the auditor's conclusions and judgments in forming his opinion.
560/ 560 Subsequent events	- Collect sufficient and relevant audit evidence in order to determine whether or not the financial statements accurately reflect events that took place between the date of the financial statement and the date of the auditor's report, which may require adjustments or disclosure, and whether or not the financial statements are in compliance with the relevant financial reporting framework. The auditor has the ability to make changes to their report if the facts call for it.	A chartered accountant is responsible for determining whether or not events that take place between the date of the greenhouse gas list and the date of the confirmation report necessitate an amendment or disclosure in the GHG list. Additionally, the chartered accountant is obligated to evaluate the appropriateness and sufficiency of the evidence that was obtained in order to determine whether or not such events are appropriately reflected in the GAAZ WAG list in accordance with the controls that are applicable.
700/ Configuration Opinion and report on the financial statements	The practice of incorporating audit risk indicators (ARI) into financial statements based on an appraisal of audit evidence and documenting these ARI in a report. This method is also known as management accounting.	72/ A chartered accountant is required to determine whether they have achieved reasonable or limited assurance regarding the inventory of greenhouse gases.
701/ Reporting things Main Audit In the independent auditor's report	It consists in the auditor identifying the main matters of the audit and reporting them by describing them in the auditor's report	It consists in the auditor identifying the main matters of the audit and reporting them by describing them in the auditor's report
706/ paragraphs Draw attention and other paragraphs in the	The auditor, after forming an opinion on the financial statements,	77/ If the chartered accountant deems it necessary:

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independent auditor's report	draws the attention of users to matters when it is necessary to do so in accordance with his professional judgment by including additional clear reporting in the auditor's report.	A. Drawing the attention of the target users to something that has been displayed or disclosed in the list of greenhouse gases and which, according to the judgment of the chartered accountant, is of great importance (attention to the attention of the accountant). B. Report something other than what has been shown or disclosed in the GHG listbecause this matter is related to users' understanding of the association or responsibilities of the chartered accountant (paragraph of another order). Unless prohibited by laws or regulations
4400 International Standard for Related Services (Updated) Agreed Procedure Links	Agree with the commissioning party on the actions to be carried out, implement the agreed actions and communicate the actions carried out and related discoveries in accordance with the requirements of this standard.	A1. Implement agreed actions on non-financial matters related to the volume of greenhouse gas emissions reported to regulatory authorities, including information, documents, measurements or compliance with laws and regulations as appropriate

The table is prepared by the researchers based on (International Federation of Accountants, International Standards for Auditing and Examination and other assurances and related services)

The fourth section: the reality of auditing indirect emissions in Iraq and a proposed audit program

International Laws, Instructions and Conventions

Laws and Regulations

- Environmental Protection and Improvement Law No. 27 of 2009.
- Instructions of National Emission Determinants for Activities and Works No. (3) of 2012.
- C. Local Accounting Rule No. (6)

International Conventions

Table (5). International Environmental Conventions

#	Details	Date and place of signing the agreement	Convention
1	The main focus of the Ramsar Convention is to protect globally important wetlands and ensure their rational use, and to support biodiversity and aquatic ecosystems, as the wetlands protected in this Convention indirectly	Adopted in 1971 and entered into	Ramsar Convention (Convention on Wetlands)

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	contribute to mitigating the effects of climate change through their ability to store carbon and sequester greenhouse gases. https://www.ramsar.org/about/our-mission/importance-wetlands	force in 1975 at Ramsar Iran	Ramsar (The Convention on Wetlands)
2	The Convention has indirectly contributed to the reduction of some greenhouse gases and continues to make progress and the countries concerned meet every three years to take decisions on important issues including research and methodological observations as well as financial and administrative matters. https://ozone.unep.org/treaties/vienna-convention	Adopted in 1985 and entered into force in 1988 Vienna Austria	Vienna Convention for the Protection of the Ozone Layer (VCPOL)
3	1/ Indirect impact of the Basel Convention It can contribute to reducing indirect emissions of greenhouse gases by improving hazardous waste management For example, improving waste management reduces the need to be incinerated or disposed of in ways that contribute to greenhouse gas emissions. 2/ Linking waste and climate change, sound waste management can contribute to reducing carbon emissions and improving resource efficiency, helping to mitigate some of the environmental impacts that contribute to climate change. It is generally accepted that the Basel Convention is primarily concerned with hazardous waste; nonetheless, the enhancement of waste management has the potential to have a positive influence on the environment, including the reduction of indirect greenhouse gas emissions. (UNEP Basel Convention, 2015:103)	Adopted in 1989 and entered into force in 1992 Basel Switzerland	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
4	While the Convention does not directly address greenhouse gases, there is a relationship between biodiversity and climate change, and this has been recognized under the Convention. The relationship between CBD and greenhouse gases: 1/ Mutual influence between biodiversity and climate change , integration with international efforts, the Convention works in cooperation with other conventions such as the United Nations Framework Convention on Climate Change (UNFCCC) to promote integrated strategies for environmental protection. 2/ Complementary actions: The Convention promotes the implementation of actions to protect biodiversity in line with climate change mitigation and adaptation efforts. For example, protecting forests and preserving ecosystems can contribute to reducing carbon emissions. https://www.un.org/ar/observances/biological-diversity-day/convention	Adopted in 1992 and entered into force on 29 December 1993 at Rio de Janeiro, Brazil	Convention on Biological Diversity (CBD)
5	The agreement directly addressed greenhouse gases and aims to address the challenges related to climate change by stabilizing greenhouse gas concentrations in the atmosphere at levels that prevent dangerous human interference in the climate system. Additionally, the	Adopted May 9, 1992 Entered into force on	United Nations Framework Convention on Climate Change

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	agreement emphasizes the necessity of reducing emissions of greenhouse gases such as carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). And other gasses that are a contributor to the warming of the planet. This agreement has served as the foundation for subsequent conventions and protocols, such as the Kyoto Protocol and the Paris Agreement, which impose more stringent commitments on nations to reduce emissions and combat climate change. Signatories to the agreement are encouraged to adopt policies and actions to mitigate emissions and adapt to the effects of climate change. Additionally, this agreement has formed the basis for the Paris Agreement.http://unfccc.int	March 21, 1994 United Nations Headquarters, New York	
6	As a result of the Protocol, industrialized nations are required to reduce their total greenhouse gas emissions (direct and indirect) by at least five percent in comparison to 1990 during the commitment period. This is an improvement on many of the commitments that were already in place under the Convention. The Protocol shares the goal of the Cut-out Protocol with the United Nations Framework Convention on Climate Change (UNFCCC).The Kyoto Protocol established three mechanisms to assist States, known as the Kyoto Flexible Mechanisms: emissions trading (ET), Joint Implementation Mechanism (JI), and Clean Development Mechanism (CDM). http://unfccc.int	Adopted on 11 December 1997 Entered into force on 16 February 2005 Kyoto - Japan	Kyoto protocol (KP) Annex to the United Nations Framework Convention on Climate Change
7	The agreement represents an important shift in how climate change is addressed at the international level, and constitutes a comprehensive framework that combines countries' efforts to reduce emissions and enhance cooperation to achieve global environmental goals, the agreement addressed greenhouse gases directly and specifically, and aims to limit global temperature rise to less than two degrees Celsius above pre-industrial levels. Some key points regarding how the Paris Agreement addresses greenhouse gases: 1/ Carbon neutrality: Carbon neutrality, sometimes known as "net zero" emissions, is the goal of the accord, which aims to achieve a balance between greenhouse gas emissions from various sources and the capacity of the Earth to absorb them (for example, through forests) in the second half of this century. 2/ Nationally Determined Contributions (NDCs): The agreement encourages all countries to submit ambitious action plans known as Nationally Determined Contributions (NDCs). These plans include targets to reduce emissions and achieve sustainable development. As part of the agreement, countries are required to update and submit their plans every five years. This allows for gradual progress towards common goals. 3/ Financial and technological support:	Adopted on 12 December 2015 during the 21st Conference of the Parties (COP21) of the United Nations Framework Convention on Climate Change held in Paris, France It entered into force on 4 November 2016.	Paris Agreement (PA)

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	The agreement includes a commitment to offer developing nations with financial and technological support in order to assist them in reducing emissions and adapting to the effects of climate change. This support will include finance from wealthy countries as well as collaboration in the transfer of technology. 4/ Adaptation and capacity building: Enhance countries' resilience to the impacts of climate change and strengthen the resilience of societies to climate risks by promoting resilience and sustainable infrastructure. http://unfccc.int		

Table prepared by the researchers

Observations of the Federal Financial Audit Office

Through studying the results of the specialized performance control work, which included (the Ministry of Electricity, the Ministry of Environment) in the Federal Financial Audit Office, the researcher found the existence of audit procedures regarding the environment within the performance audit programs, which included environmental violations and direct emissions only for public companies to produce electrical energy in the Ministry of Electricity.

Key Observations of the Federal Financial Audit Office

We present some of the observations contained in a sample of the reports of the Federal Audit Office that are related to the subject of the research, as shown below:

Observations of the Federal Audit Office on the activities of the Ministry of Electricity in controlling pollutants resulting from the work of electric power plants for the period from 1/1/2019 to 1/5/2022:

Environmental Violations of Electric Power Production Companies

The failure of most of the electric power plants to comply with the approved environmental determinants and the failure to conduct the necessary environmental treatments for their gaseous, liquid and solid waste, in addition to the failure ofmost of these stations to conduct environmental examinations of industrial water and gases resulting from their work, which negatively affect the surrounding environment and the health of citizens, contrary to paragraph (first) of Article (14) of the Environmental Protection and Improvement Law No. (27) of 2009, which stipulates (It is forbidden to discharge any liquid waste to the surface and groundwater internal water resources except after conducting the necessary treatments on them and paragraph (first) of Article (15) of the Environmental Protection and Improvement Law No. (27) for the year / 2009, which stipulated (prevents the emission of gases resulting from production processes or burning fuel to the air except after conducting the necessary treatments to ensure their compliance with environmental legislation and the following table shows those violations **According to each company:**

#	Company Name	Number and type of stations	Tests that have not been performed
1	State Company for Energy Production Central Region Electric	17 Thermal / Gas / Diesel Stata2qsEwions	` Lack of tests for gaseous pollutants emitted from chimneys due to the lack of devices

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2	State Company for Energy Production Southern Region Electric	3 Stations	Lack of tests for gaseous pollutants emitted from chimneys due to the lack of devices
3	State Company for Energy Production Northern Region Electric	3 Stations	Lack of tests for gaseous pollutants emitted from chimneys due to the lack of devices
4	State Company for Energy Production Electric / Middle Euphrates	12 stations Thermal/Gas/Diesel	Lack of tests for gaseous pollutants emitted from chimneys due to the lack of devices

Ministry of the Environment

The inaccuracy of the information provided to the Federal Audit Office by the Technical Department at the Ministry of Environment contained in their letter No. (DF/7/986) on 29/6/2022 regarding polluting electric power plants and the measures taken against them, in addition to information related to the availability of treatment units in those stations and their numbers subject to the Ministry's control, as shown below:

The weakness of environmental follow-up by the environmental departments in Baghdad and the provinces for electric power production stations, where the Ministry indicated that the number of stations violating environmental conditions is (8), while the Ministry of Electricity / General Company for Inspection and Rehabilitation of Electrical Systems / Department of Occupational Safety and Environment indicated that the number of stations containing environmental violations is (35) stations.

There is a discrepancy in the information provided to the Bureau regarding the number of electric power plants throughout Iraq, amounting to (30) stations, except for the Kurdistan region, with the information provided by the Ministry of Electricity / Technical Department, where it indicated that the number of stations in Iraq is (70) stations, which indicates the weakness of environmental control by the departments of the Ministry of Environment on electric power plants.

Information on the availability of liquid waste treatment units in electric power plants was not fully provided to the NAO, as the response of the Ministry of Environment / Technical Department was limited to (12) hydroelectric power plants only, and the rest of the stations were not included. (Federal Audit Office / Specialized Performance Appraisal Section 9553, 2023: 3-25).

Proposed Audit Programme

The program's preparation has adhered to a variety of international standards, such as the Paris Agreement, the Kyoto Protocol, the Greenhouse Gas Protocol, the World Bank Group (WBG), the World Meteorological Organization (WMO), the Global Reporting Initiative (GRI) Standards, International Organization for Standardization (ISO) Standards, Accounting Rule No., the Paris Agreement, the Kyoto Protocol, the Greenhouse Gas Protocol, the World Bank Group (WBG), the World Meteorological Organization (WMO), a top-down approach (modeling techniques), directives and data from the United Nations Framework Convention on Climate Change (UNFCCC), guidelines from the Intergovernmental Panel on Climate Change (IPCC), and additional international standards. (6)The researchers clarify, through the proposed audit program, the procedures that represent the minimum included in the greenhouse gas audit program for indirect emissions, and the main objective of the program is to identify the environmental effects of these emissions and enable the concerned authorities to follow them up and develop possible solutions to control them, the program can be applied in all economic units in the Iraqi environment for indirect emissions of the two bands (3 and 2).

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First: General Matters

The first step is to make certain that all local rules and regulations, as well as international agreements, that are related to the environment and climate change are followed accordingly. The Paris Agreement, the Kyoto Protocol, the United Nations Framework Convention, and the directions of the Intergovernmental Panel on Climate Change are all examples of conventions that fall within this category.

Ensure the measures taken by the establishment to determine the amount of indirect emissions through the size and number of devices in the Environment Department or through cooperation with the Directorate of Environment in the governorate.

Ascertain the actions that the enterprise will take to reduce indirect emissions.

Ensuring the proportions of greenhouse gases to indirect emissions (from carbon dioxide equivalent and fractionation into CO2 by 78.41%, CH4 by 12.905%, and Nitrous oxide N2O by 5.9% according to the data of theUnited Nations Framework Convention on Climate Change (UNFCCC).

Second: Energy Sector

Ensure the preparation of lists of greenhouse gases for the energy sector and for the bands (2) and (3) and in the event that they are not prepared to ensure the following:

- Obtain an indirect emission disclosure in which emissions are specified within band (2) and (3) in accordance with the international confirmation correlation standard (3410) and in accordance with the Greenhouse Gas Protocol in which the energy consumed purchased is within band (2) and the energy transmission and distribution losses are within band (3).

- Obtain a list of the readings of electricity consumption meters in kilowatt-hours (kwh) installed in the facility and match them with the issued electricity bills.

- Dividing the amounts fixed in electricity bills by the cost of energy consumption (120) dinars, which is the cost of kilowatt-hours for government consumption to ascertain the amount of energy consumed in kilowatt-hours.

- Matching the readings of electricity consumption meters installed in the buildings of the facility in kilowatt hours with the data of the General Company for Electricity Distribution / Energy Sales Department for the same period.

- Ascertaining the amount of power transmission and distribution losses through the specialized engineers in the General Company for Electricity Distribution.

- Ensure that Iraq's emission factor of 0.9339 in the United Nations Framework Convention on Climate Change (UNFCCC) data is used.

- Ensure that Iraq's emission factor is used for energy transmission and distribution losses of (0.02005) for power transmission and distribution losses and (0.00908) for cooling and heating losses contained in the data of theUnited Nations Framework Convention on Climate Change (UNFCCC).

- Ensure standardization of emission units of tonnes of carbon dioxide equivalent or kilograms of carbon dioxide equivalent.

- PM2.5 Ensure the use of the emission factor of (0.0005) g/kWh for energy production contained in the reports of the Intergovernmental Panel on Climate Change (IPCC).

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Third: Transport Sector

Land transport (private)

Verify the number of cars entering by requesting this from the competent department.

Ensure compliance with the emission factor of gasoline fuel of (0.14836) per km/day contained in the data of theUnited Nations Framework Convention on Climate Change (UNFCCC).

Obtaining a statement of the Projects and Reconstruction Department showing the distances inside the facility or through the Google Earth program or through the private car to calculate the rate of the car inside the facility.

PM2.5 Estimation of particulate matter emission rate of (4.5) mg/km for gasoline engines contained in standard vehicle emission data.

Air Transport (Business Travel)

Ensure the correct calculation of indirect emissions generated from business travel through:

Obtain a list of submissions including the countries to which they are sent together with the number of persons sent.

Enter the name of the country to which they are sent in the ICAO Carbon Emissions Calculator to calculate the distance to and from Baghdad International Airport and extract the amount of emission per delegate and then multiply it by the number of people sent to obtain the total emissions.

Fourth: Construction Sector **Construction and rehabilitation of permanent places**

Ascertaining the number of completed projects during a period by requesting a list of such projects from the Projects and Reconstruction Section, including the name of the project, the area of the project in cubic meters, the number of floors, the type of project, building from scratch or rehabilitation.

Ensure that emissions per floor are calculated by multiplying the area of one floor by square meters × the amount of emissions per floor of (379) kilograms of carbon dioxide equivalent per floor completed from zero and (94) kilograms of carbon dioxide equivalent per floor per floor rehabilitated contained in the Life Cycle Assessment Program (LCA).

Fifth: Waste Sector

Ensure that the World Bank statistics are adopted for the daily production rate of waste per capita of 1.03 kg/day per capita in Iraq.

(B) Ascertaining the amount of waste generated in the facility through the governorate municipality to know the volume of daily or annual waste.

Ensure that waste is classified into the types officially approved by the World Bank 58% food, 13% paper and cardboard, 12% plastic, 8% other, 3% glass, 3% metal, 2% rubber and leather, 1% wood.

Ascertaining the amount of emissions caused by each ton of waste landfill by the municipality (Landfill) amounting to 626.907 food, 1041.836 paper and cardboard, 8.934 plastic, 1.2489 others, 8.934 glass, 8.934 metals, 444.976 rubber and leather, 828.0647 wood/kg CO2 equivalent/ton, according to the United Nations Framework Conventionon Climate Change (UNFCCC).

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Checking with the municipality of the governorate about the recycling of waste for reuse and what quantities are recycled.

Sixth: Water Sector

Ascertaining the quantities of water consumed through the main pumping station and secondary stations.

Obtaining from the water department to maintain the volume of water consumed and matching this data with the data of the main pump.

Ensure the standardization of units of measurement of water consumed either in liters or cubic meters.

Ensure compliance with the emission factor for water consumption of (0.34400) per cubic meter contained in the data of theUnited Nations Framework Convention on Climate Change (UNFCCC).

Seventh: Detention or Removal

Ascertaining the number of trees planted and green spaces and the ages of those trees by obtaining a list from the Agricultural Division.

Ensure the retention rate per tree of (35.5) kg/year and the soil retention rate of (4.3) kg/m2/year for carbon dioxide.

Eighth: Internal Audit

To determine the quantity of indirect emissions, lawsuits that have been filed as a result of emissions, and fines that have been incurred, it is necessary to request and evaluate records from internal audits.

Ninth: Annual Management Report

Review the annual management report to verify the disclosures contained therein:

Accounting Rule No. (6)

General information: the name of the establishment, the date of its establishment, the law governing it, the nature of its activity, its specialization and main objectives, the total number of employees, the organizational structure of the establishment.

General Economic and Social Indicators

Are there any disclosures regarding the measures and procedures taken by the facility to maintain the safety of the environment?

Additional Information and Indicators

Sustainability reports for disclosure:

SDG 6: Clean Water and Sanitation, SDG 7: Affordable and Clean Energy, SDG 9: Industry, Innovation and Infrastructure, SDG 12: Responsible Consumption and Production, SDG 13: Climate Action

Ensure that the following is disclosed in the management report:

Disclosure of energy consumption within the organization, total electricity consumption based on **the 302 GRI standard – energy**.

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Disclosure of total energy indirect greenhouse gas emissions (range 3.2) tonnes of CO2 equivalent based on **GRI 305 –(2) emissions**

Disclosure of the gases included in the calculation, whether CO2, CH4 methane or N2O based on **the 305 GRI standard – (2) emissions**.

Disclosure of the exclusion of any trade in greenhouse gas emissions or the removal from the calculation of total indirect greenhouse gas emissions and the percentage of greenhouse gas emission intensity based on **the 305 GRI standard –(2) emissions (3)**

Disclosure of the total weight of waste produced in metric tons and the breakdown of this total according to the composition of waste **Standard 306 GRI - Waste / 2020**.

Standard 307 – Environmental Compliance / 2016

Disclosure of non-compliance with environmental laws and regulations.

ISO Standards

ISO 14064-1:2018 for disclosure:

Regulatory limits, operational limits, data collection and emissions measurement, expected benefits.

ISO 14001:2015 for disclosure:

An environmental management system that aims to improve environmental performance.

ISO: 2015:14001/ AMD 1:2024 to disclose:

Guidelines for an effective environmental management system , including indicators:

Leadership and commitment, strengthening the organization's context, environmental goals and planning, risk-based thinking, compliance commitments, operational control and performance appraisal, documented information.

Conclusions

Upon examining environmental legislation, regulations, directives, and international accords pertaining to emissions, the following observations were made:

- Iraqi laws dealt with most aspects related to preserving the environment, but did not address emissions and their classification into direct and indirect.
- The permissible limits for indirect emissions and for the two bands (3 and 2) for gases (carbon dioxide, methane, nitrous oxide) are not addressed in the Iraqi laws and instructions.
- The environmental effects are not determined as a result of violating the laws, and the size of the stipulated fines is not compared with the size of the environmental impact.
- Iraq's failure to adhere to the stipulations of the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement, notwithstanding its ratification.

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There is no specialized audit program for auditing indirect emissions by the Federal Audit Office, as the NAO relies on performance audit programs and environmental audit procedures related to compliance with the laws and instructions in force.

Recommendations

- Emphasis on the preparation of greenhouse gas inventories for indirect emissions for bands (3 and 2) by economic units and for major gases (carbon dioxide, methane, nitrous oxide).
- The need to adopt the proposed audit program to audit greenhouse gases for indirect emissions in all economic units in Iraq.
- Emphasizing compliance with local laws and instructions and international agreements to reduce emissions, with the need to legislate laws or instructions to impose a direct tax (carbon tax) or increase financial fines for economic units that cause indirect emissions.
- Work on following up projects to reduce indirect emissions with the concerned authorities and granting incentives to environmentally friendly economic units.

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