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COMPREHENSIVE REPORT ON GREENHOUSE GAS INVENTORY IMPLEMENTATION

Giant Barb
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I. OVERVIEW OF GREENHOUSE GAS

Greenhouse gases include gases such as Carbon dioxide (CO2); Methane (CH4); Nitro oxide (N2O); Hydrofluorocarbons (HFCs); Perfluoro carbons (PFCs); Sulfur hexafluoride (SF6),... has the ability to retain heat in the atmosphere, contributing to the increase in the greenhouse effect and climate change. Without greenhouse gases, the average temperature of the Earth's surface would be about –18°C, instead of the current average of 15°C. Several other planets in the solar system also contain greenhouse gases.

1.1. Greenhouse Gas Composition

Element	Symbol	Contribution rate (%)
Steam	H2O	49 – 71%
Carbon Dioxide	CO2	22 – 29%
Methane and Dinitrogen monoxide	CH4 + N2O	4 – 8%
Ozon	O3	7 – 10%
Chlorofluorocarbon	CFC	
Hydrofluorocarbon	HCFC and HFC	

There are also Sulfur hexafluoride, Hydrofluorocarbon and Perfluorocarbon gases.

1.2. Comparison of Greenhouse Gas Emissions

The basic element in the atmospheric structure changes from time to time depending on the situation of greenhouse gas emissions. Currently, the content of greenhouse gas emissions that has been developing is Carbonic accounting for **74.4%**; Methane accounts for **17.3%**; N2O accounts for **6.2%**; Fluorine gas group accounts for **2.1%**... of the total emissions into the atmosphere.

Source: World Resource Institute- [World Greenhouse Gas Emissions: 2016].

II. SCOPES OF GREENHOUSE GAS EMISSION

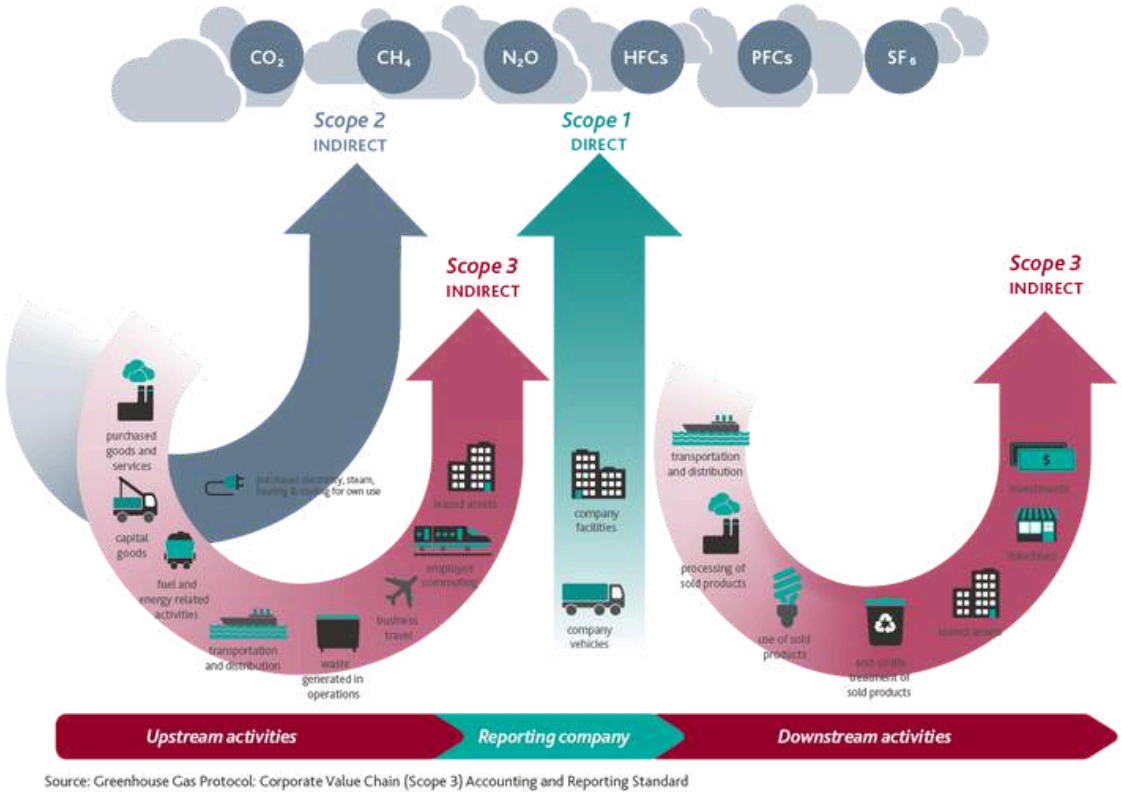
Kyoto Protocol - a decree related to the **United Nations Framework Convention on Climate Change** at the international level of the United Nations with the goal of reducing Greenhouse gas emissions that identifies sources of Greenhouse gas emissions and Divide them into scopes:

Scope 1: Direct Emissions

Direct emissions from activities that an organization or business creates in its daily business process due to fuel consumption at the place where emissions are emitted through incinerators, open sump chimneys or other means. facilities and equipment owned by them

Scope 2: Indirect Emissions

A type of emission generated from the production of energy used by an organization. This includes emissions from the production of electricity, fuel, or other energy sources consumed by the organization.



Source: Greenhouse Gas Protocol: Corporate Value Chain (Scope 3) Accounting and Reporting Standard

Scope 3: Secondary Indirect Emissions

All other types of indirect emissions of organizations and businesses, as a consequence of their activities: using purchased materials, using public transport.

III. GREENHOUSE GAS EMISSION OF VIETNAM

3.1. Agriculture

According to the greenhouse gas inventory results of the Ministry of Natural Resources and Environment, greenhouse gas emissions in the agricultural sector account for **35%** of the country's total greenhouse gas emissions.

3.2. Land Use and Forestry

Based on statistics, land in the territory of Vietnam is classified into 6 types, including: forest land, crop land, grassland land, wetlands, residential land and other types of land. For the emission or absorption of greenhouse gases in the land use sector is the process of changing carbon stocks in:

- Above-ground and below-ground biomass;
- Organic waste (dead trees, fallen branches and leaves);
- Land

3.3. Waste

According to analysis in Vietnam, in recent years, each year over **15 million tons** of solid waste are discharged from different sources, of which over 80% is from urban areas. However, only **over 70%** of solid waste in urban areas and **about 20%** in rural areas are collected and processed.

Meanwhile, greenhouse gas emissions of this sector mainly include:

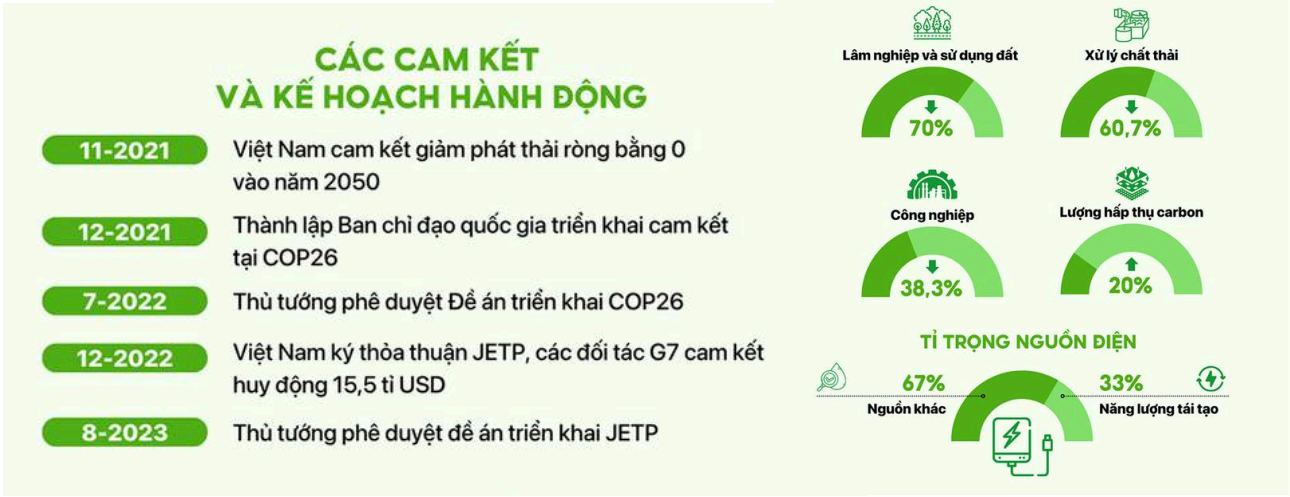
- **CH4** emissions from collected solid waste landfills; from industrial wastewater and domestic wastewater;
- **N2O** emissions from domestic wastewater sludge; **CO2** and **N2O** emissions from waste burning process.

*From the above bases, it can be seen that Vietnam is one of the countries with continuously increasing greenhouse gas emissions, from more than **21 million tons** to **150 million tons of CO2** in the 1990s to 2000 and currently increasing to more than **300 million tons of CO2***

IV. GOVERNMENT'S ACTIONS

At the 2021 **United Nations Climate Change Summit (COP 26)**, **Prime Minister Pham Minh Chinh** spoke with a commitment: *Vietnam will bring net emissions to "zero" by 2050.*

Vietnam's green transition journey is requiring a lot of efforts from relevant parties to overcome difficulties in finance, human resources and technological solutions...



Source: Tuoi Tre Newspaper

NProminent in the global **Net-Zero** ambition map, Vietnam sets a determined goal of committing to reduce emissions by **43.5%** by **2030**. In the context of increasingly strict environmental regulations from other countries development, Vietnam is clearly aware of the need to accelerate the pace of green transformation and sustainable development. Reducing emissions is not only a responsibility but also a common imperative for the whole country, businesses and each individual.

Source: Tuoi Tre Newspaper

V. GREENHOUSE GAS INVENTORY

Decree No. 06/2022/ND-CP on *"Regulations on reducing greenhouse gas emissions and protecting the ozone layer"* issued by the Government on January 7, 2022 stipulates:

Greenhouse Gas (GHG) Inventory is the activity of collecting information and data on sources of greenhouse gas emissions, calculating the amount of greenhouse gas emissions, and absorption of greenhouse gases within a specified range and within a certain period of time and specific year according to methods and procedures issued by competent authorities.

On January 18, 2022, the Prime Minister issued a list of fields and establishments emitting greenhouse gases that must conduct greenhouse gas inventories in **Decision No. 01/2022/QD-TTg**. This is a legal document that stipulates specific subjects must carry out greenhouse gas inventory and greenhouse gas emission mitigation according to the **Law on Environmental Protection 2020** and **Decree No. 06/2022/ND-CP** dated January 7, 2022 of the Government regulations on mitigating greenhouse gas emissions and protecting the ozone layer.

Of the **1,912** facilities that must be implemented, **1,662** facilities are under the management of the Ministry of Industry and Trade, **70** facilities are under the management of the Ministry of Transport, 104 facilities are under the management of the Ministry of Construction and **76** facilities are under the management of the Ministry of Natural Resources and Environment.

5.1. Greenhouse Gas Emission Facilities Shall Conduct Inventories

According to **Article 6, Decree 06/2022/ND-CP** stipulating the development and updating of the list of fields and facilities required to inventory greenhouse gases, including:

Facilities that emit greenhouse gases must conduct a greenhouse gas inventory if they have an annual greenhouse gas emission of 3,000 tons of CO2 equivalent or more or fall into one of the following cases:

a) Thermal power plants and industrial production facilities with total annual energy consumption of ***1,000 tons of oil equivalent (TOE) or more;***

b) Freight transport companies with total annual fuel consumption of ***1,000 TOE or more;***

c) Commercial buildings with total annual energy consumption of ***1,000 TOE or more;***

d) Solid waste treatment facilities with annual operating capacity of ***65,000 tons or more.***

5.2. Sectors Required to Conduct GHG Inventories

There are 06 sectors that must conduct greenhouse gas inventories

Field 01: Energy: Energy production industry, Energy consumption in industry, commerce, services and civil use; coal, oil, and natural gas exploitation.

Field 02: Transportation: Energy consumption in transportation.

Field 03: Construction energy consumption in the construction industry; Industrial processes in the production of construction materials.

Field 04: Industrial processes: Chemical production; Metallurgical; electronics industry; use substitutes for ozone-depleting substances; production and use of other industrial products.

Sector 05: Agriculture, forestry, land use: Livestock; forestry and land use change; crop; energy consumption in agriculture, forestry and fisheries; other emission sources in agriculture.

Field 06: Waste: Solid waste landfill; solid waste treatment using biological methods; incineration and open burning of waste; wastewater treatment and discharge.

VI. RESPONSIBILITIES OF FACILITIES IMPLEMENTING INVENTORY ACCORDING TO DECREE 06/2022/ND-CP

Facilities that emit greenhouse gases on the list specified in **Decision 01/2022/QD-TTg** or establishments that are not subject to regulations are encouraged to mitigate greenhouse gas emissions in accordance with this condition. Its events and activities are aimed at enhancing the image of a sustainable enterprise that meets the requirements of brands responsible for monitoring and implementing **Decree 06/2022/ND-CP** until 2030.

Before 31/03/2023
Provide operational data and related information for GHG inventory

Before 31/03/2025
Implement grassroots-level GHG mitigation. Develop GHG emissions report for 2024

Before 31/03/2025
Complete the GHG inventory results report

TOWARDS 2050 "NET ZERO"

Before the Inventory reporting period
Develop a GHG emission mitigation report

Before 31/12/2025
Develop and approve a plan to reduce GHG emissions for 2026-2030

Before 31/12/2022
Application for use of controlled substances

15/01/2023
Report your use of controlled substances

From 01/01/2024
Collect controlled substances when no longer in use or destroy

15/01/2024
Report use of controlled substances

*Timelines that businesses need to monitor and carry out activities related to Greenhouse Gas Inventory specified in **Decree 06/2022/ND-CP.***

VII. GREENHOUSE GAS INVENTORY REPORT

7.1. Legal Basis

- **Law on Environmental Protection 2020**

- **Decree No. 06/2022/ND-CP** dated January 7, 2022 of the Government: *Regulations on mitigating greenhouse gas emissions and protecting the ozone layer.*

- **Circular No. 01/2022/TT-BTNMT** dated January 7, 2022 of the Ministry of Natural Resources and Environment: *Detailed regulations on implementation of environmental protection law on response to climate change.*

- **Decision No. 01/2022/QD-TTg** dated January 18, 2022 of the Prime Minister: *Promulgating a list of fields and establishments emitting greenhouse gases that must conduct a greenhouse gas inventory.*

- **Circular 17/2022/TT-BTNMT** dated November 15, 2022 of the Minister of Natural Resources and Environment: *Technical regulations for measurement, reporting, appraisal of greenhouse gas emission mitigation and greenhouse gas inventory management field.*

- **Circular 38/2023/TT-BCT** dated December 27, 2023 of the Ministry of Industry and Trade: *Technical regulations on measurement, reporting, appraisal of greenhouse gas emission mitigation and greenhouse gas inventory in the Industry and Trade sector.*

- **TCVN ISO 14064-1:2011; TCVN ISO 14064-2:2011; TCVN ISO 14064-3:2011.**

7.2. Giant Barb's Greenhouse Gas Inventory Report Development Process

Greenhouse Gas Inventory Process and Develop emission reduction plan accordingly **Circular 28/2023/TT-BTNMT** includes the following steps:

1. Investigate and collect information on the current status of the facility's operations and related information.
2. Determine operational boundaries and greenhouse gas inventory methods.
3. Select emission coefficient for greenhouse gas inventory at facility level.
4. Select, collect and analyze greenhouse gas inventory activity data.
5. Calculate greenhouse gas inventory emissions.
6. Quality control of greenhouse gas inventories at work.
7. Assessing the uncertainty of greenhouse gas inventories.
8. Recalculating the Greenhouse Gas Inventory.
9. Develop a greenhouse gas inventory report.
10. Research and propose solutions to reduce greenhouse gas emissions for the facility.
11. Research, evaluate feasibility and develop a plan to reduce greenhouse gas emissions for the facility.

7.3. Greenhouse Gas Inventory Report Structure

The grassroots-level greenhouse gas inventory report includes 3 chapters listed in **Appendix II - Decree 06/2022/ND-CP** including the following parts:

Chapter 1: Information of facilities subject to Greenhouse Gas Inventory

- Facility name, address, business license
- Information about the facility's representative before the law
- Information about business and production activities

Chapter 2: Information about production and business activities

- Boundaries and scope of facility operations
- Facility infrastructure, technology and operations
- Emission sources and sinks of greenhouse gases within scope
- Information system and data on greenhouse gas emissions of the facility

Chapter 3: Results of implementing the Greenhouse Gas Emissions Inventory

- Describe the greenhouse gas emissions inventory method
- Operational metrics related to the facility's greenhouse gas emissions
- Results of the facility's greenhouse gas inventory
- Reliability, completeness, uncertainty of information and data on greenhouse gas emissions and greenhouse gas inventory results

VIII. GIANT BARB'S COMMITMENT

- ✓ A team of experts with degrees and certifications and many years of experience in the field of energy and environmental inventory.
- ✓ experience working professionally with businesses.
- ✓ Handle work well with Agencies and Departments.
- ✓ Accurate - Timely - Secure

“REACH OUT TO US TODAY, AND TOGETHER, LET'S SHAPE A BETTER TOMORROW”

Together, we can make a difference that transcends boundaries and leaves a positive legacy for generations to come.

Giant Barb is a pioneer in the field of Carbon Finance in Vietnam, offering comprehensive services such as Greenhouse Gas Inventory, ESG Reporting, and Carbon Credit Market solutions to both domestic and international enterprises.

With the motto "Towards a low carbon society", Giant Barb connects individuals, investors, businesses, and governments together to build green projects aimed at carbon neutrality, contributing to global efforts in combating climate change.

Find out more here:
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