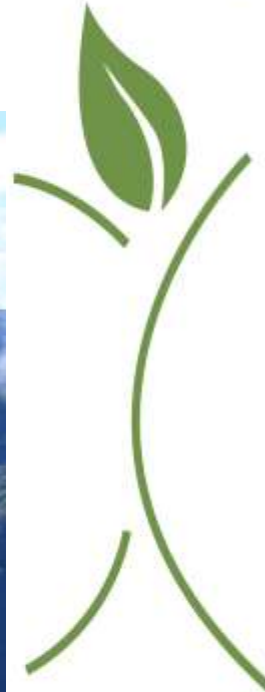




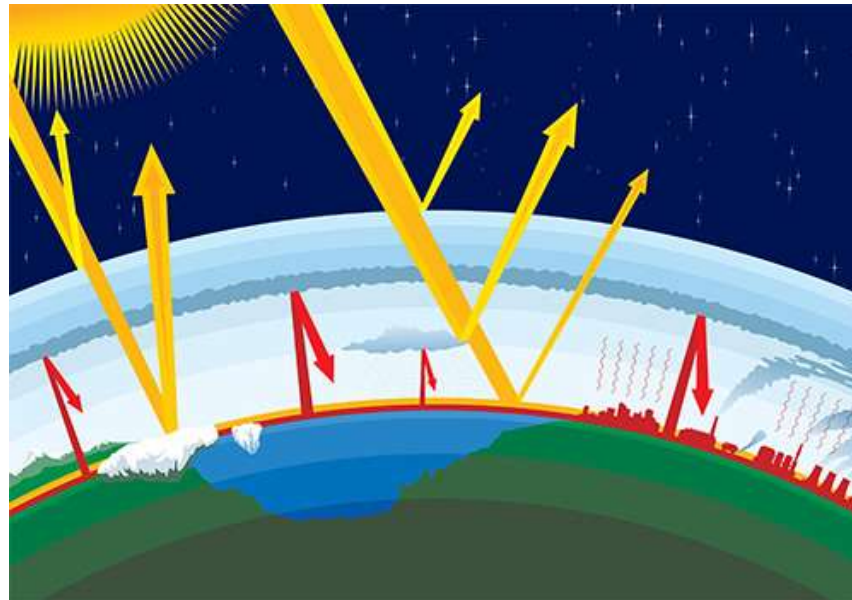
# CARBON EMISSIONS MANAGEMENT

Health & Safety and Environment



# WHAT IS GREENHOUSE GAS?

- 📍 A greenhouse gas is defined as any gaseous compound that is capable of absorbing infrared radiation in the atmosphere.
- 📍 In other words, greenhouse gases trap and hold heat in the atmosphere.
- 📍 Greenhouse gases in the atmosphere increase the temperature at the surface, thereby causing global warming, and eventually climate change.



# WHAT ARE GREENHOUSE GAS EMISSIONS?

There are seven gases covered by the Kyoto Protocol. These gases must be accounted and reported by companies and organizations preparing a corporate-level GHG emissions inventory as per the GHG (Greenhouse Gas) Protocol Corporate Accounting and Reporting Standard.



- Carbon Dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous Oxide (N<sub>2</sub>O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PCFs)
- Sulphur hexafluoride (SF<sub>6</sub>)
- Nitrogen Trifluoride (NF<sub>3</sub>)



## 2.0 RELATED STANDARDS

### 2.1 ISO 14064

The ISO 14064 standards for greenhouse gas accounting and verification published on 1 March 2006 by ISO (International Organization for Standardization) provide government and industry with an integrated set of tools for programs aimed at reducing greenhouse gas emissions, as well as for emissions trading.

**ISO 14064 is prepared in three parts:**

#### ISO 14064: Part 1

- This part details principles and requirements for designing, developing, managing and reporting organization- or company-level GHG inventories. It includes requirements for determining GHG emission boundaries, quantifying an organization's GHG emissions and removals and identifying specific company actions or activities aimed at improving GHG management. It also includes requirements and guidance on inventory quality management.

#### ISO 14064: Part 2

- This part focuses on GHG projects or project-based activities specifically designed to reduce GHG emissions or increase GHG removals. It includes principles and requirements for determining project baseline scenarios and for monitoring, quantifying and reporting project performance relative to the baseline scenario and provides the basis for GHG projects to be validated and verified.

#### ISO 14064: Part 3

- Part 3 of ISO 14064 specifies principles and requirements and provides guidance for those conducting or managing the validation and verification of greenhouse gas (GHG) assertions. The requirements of this part of ISO 14064 describe a process for providing assurance to intended users that an organization's or project's GHG assertions are complete, accurate, consistent, transparent and without material discrepancies.



## 2.0 RELATED STANDARDS

### 2.2 GREENHOUSE GAS (GHG) PROTOCOL

- 📍 The Greenhouse Gas (GHG) Protocol Corporate Accounting and Reporting Standard provides requirements and guidance for companies and other organizations preparing a corporate-level GHG emissions inventory.
- 📍 It establishes a comprehensive, global, standardized framework for measuring and managing emissions from private and public sector operations, value chains, products, and cities.
- 📍 The standard covers the accounting and reporting of seven greenhouse gases covered by the Kyoto Protocol – carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PCFs), sulphur hexafluoride (SF<sub>6</sub>) and nitrogen trifluoride (NF<sub>3</sub>).
- 📍 It was updated in 2015 with the Scope 2 Guidance, which allows companies to credibly measure and report emissions from purchased or acquired electricity, steam, heat, and cooling.



## 2.0 RELATED STANDARDS

### 2.3 SCOPE CONCEPT

To help delineate direct and indirect emission sources, improve transparency, and provide utility for different types of organizations and different types of needs and goals, three “scopes” are defined for GHG accounting and reporting purposes. **The GHG Protocol urges organizations to account for and report at least Scope 1 and 2.**

**SCOPE 1:** Accounts for direct GHG emissions from sources that are owned or controlled by the reporting company.

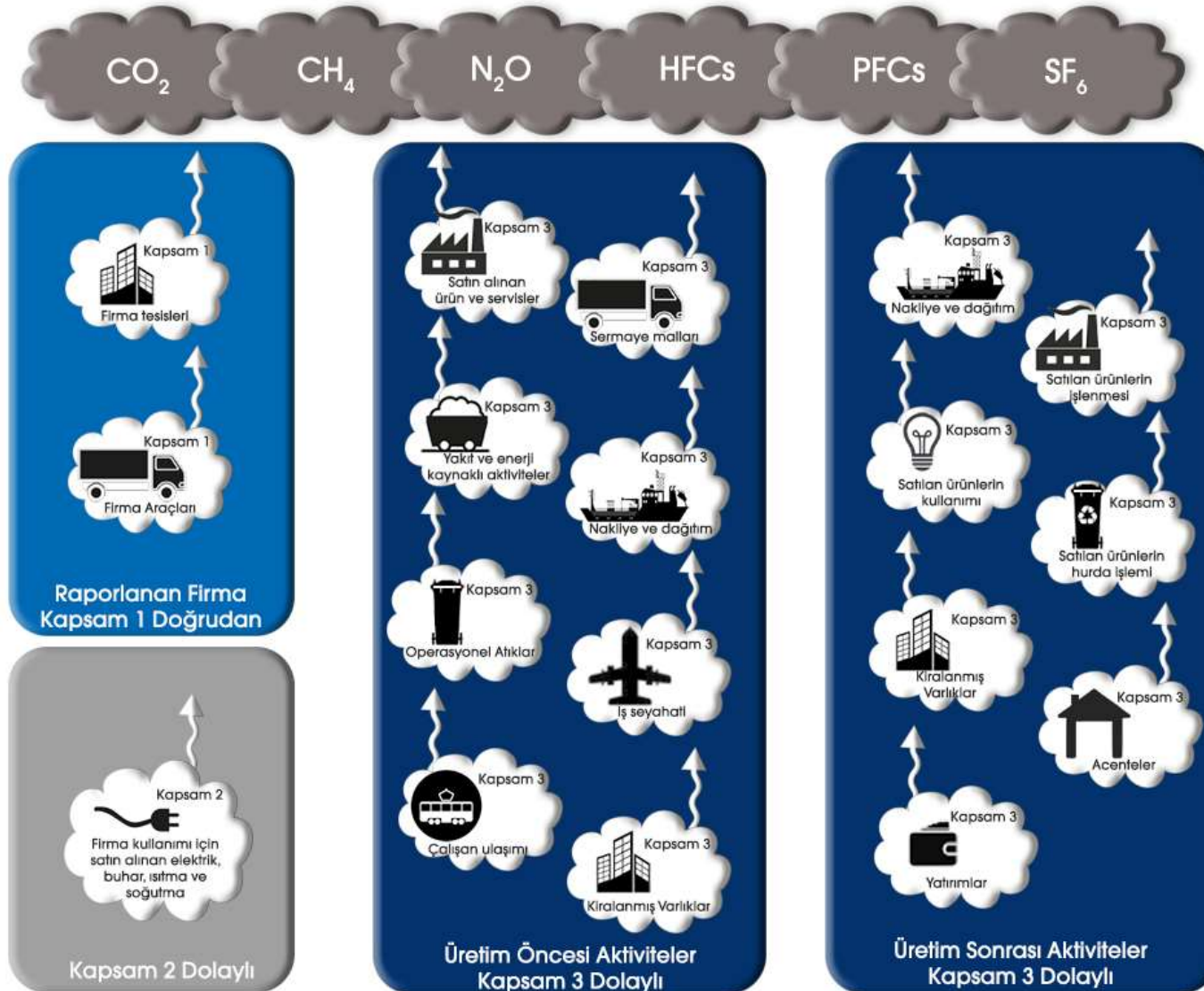
**SCOPE 2:** Accounts for indirect emissions associated with the generation of imported/purchased electricity, heat, or steam.

**SCOPE 3:** Allows for the treatment of other indirect emissions that are a consequence of the activities of the reporting company, but occur from sources owned or controlled by another company.



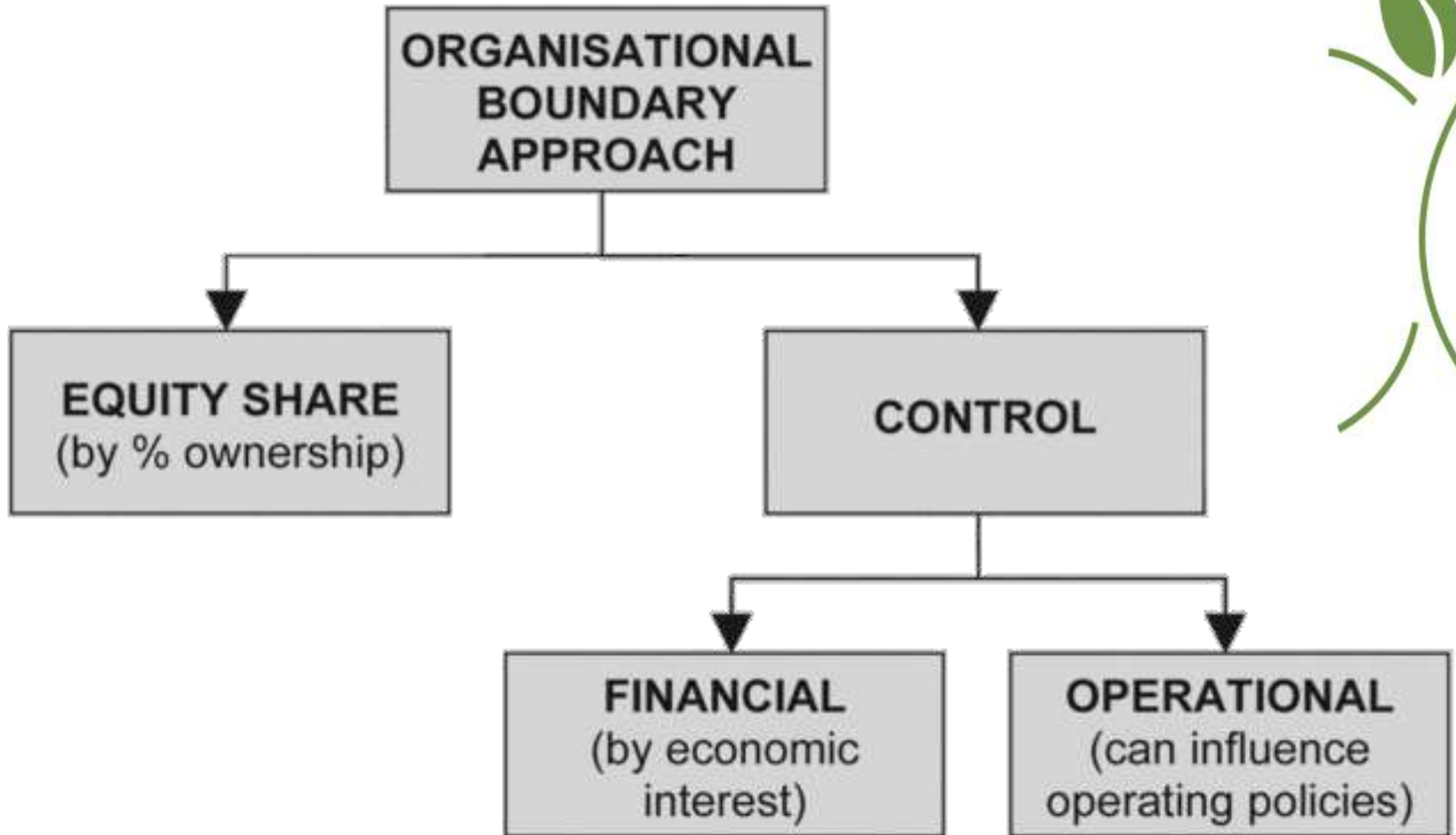
## 2.0 RELATED STANDARDS

### 2.3 SCOPE CONCEPT (CONT)



## 2.0 RELATED STANDARDS

### 2.4 SYSTEM BOUNDARIES





### 3.0 QUICKCARBON (Özyeğin University Carbon Emissions Measurement Software)

QuickCarbon is the software program employed at Özyeğin University as a comprehensive solution to track, forecast, and manage greenhouse gas emissions. It automatically covers all key standards and references for greenhouse gas emissions.

The multifunctional dashboard of our Quickcarbon software makes all **increases in GHG emissions** visible to allow you make proactive decisions and affect your results.

#### Features and Benefits:

Accurate calculation of greenhouse gas emissions

“Audit-Ready Output” in compliance with the ISO 14064-1 standard

Target setting, simulation, and scenario analysis



- Our software system employs the “2006 IPCC Guidelines” and “Greenhouse Gas Protocol Corporate Standard” to accurately account for greenhouse gas emissions.
- We employ original factors such as calorific/heating values and fuel density to achieve precise, error-free results.
- We increase productivity in order to save.



GREENHOUSE  
GAS PROTOCOL



## 3.0 QUICKCARBON (Özyeğin University Carbon Emissions Measurement Software)

### 3.1 EASY “AUDIT-READY OUTPUT” IN COMPLIANCE WITH THE ISO 14064-1 STANDARD

“Audit Ready Output” is a concept that ensures that all outputs from a GHG accounting system are fit for purpose and can be subject to independent audit without the need for reporting organizations to carry out any further calculations, clarification, data manipulation or other “pre-audit” work. An audit ready system must therefore include the following features in order to be in compliance with the ISO 14064-1 standard:

- A list of all emission sources and all activity/operational data,
- A full list of all the methodologies employed for calculations, including emission factors and conversion factors,
- Detailed calculations of emissions for each scope,
- Uncertainty analysis of calculations,
- Functional units and their emission reduction targets,
- All company-specific data which may be added by users for external audits

