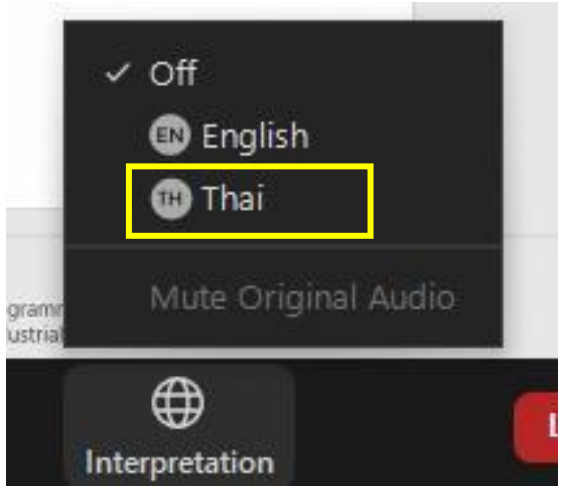
Welcome! We will begin shortly.

How to connect to Thai language live-translation



1. **Click on "Interpretation" icon**
2. **Click "Thai" for live interpretation Thai audio**
3. **Mute Original Audio (optional)**

Glossary

- **ESG :** Environment, Social, and Governance
- **GRI :** Global Reporting Initiative (*Event Organiser*)
- **CDP:** Carbon Disclosure Project (*Event Organiser*)
- **TCFD:** Task force on Climate-Related Financial Disclosures
- **GRI Standards:** Standards for Sustainability Reporting
- **SDGs:** Sustainable Development Goals
- **SBT:** Science-based target
- **SBTi:** Science-based Targets Initiative
- **NDC:** Nationally Determined Contributions

TCFD Deep Dive: Greenhouse Gas (GHG) Accounting

Delivered by CDP

October 2021

UK PACT: Partnering for Accelerated Climate Transitions

UK PACT is a £60 million programme running between 2018 and 2022

Mission and vision

- Delivered by **BEIS, the UK's Department for Business, Energy and Industrial Strategy**, through the UK's International Climate Finance (ICF)
- Supporting **achievement of Nationally Determined Contributions (NDCs)** and the long-term goal of the 2015 Paris Agreement to **limit dangerous climate** change
- **Demand-driven**, adjusting key focus areas based on partner countries' needs and sectoral priorities

We will achieve this by:

- Working with partner countries to improve the capacity and capability of key institutions to reduce emissions and foster inclusive economic growth
- Addressing barriers and constraints to clean growth
- Pursuing opportunities for greater climate ambition

For more information, visit www.ukpact.co.uk

UK PACT: Partnering for Accelerated Climate Transitions

Delivered by CDP and GRI

Closing the gap on sustainable finance and enabling green recovery through capacity-building in CDP's TCFD-aligned disclosures and the GRI standards

This will be done through:

- Workshops
  - *Beginner (1x workshop)*
  - *Advanced 2x (workshop)*
  - *Capital markets (1x workshop)*
- Published materials
- Follow-up engagement

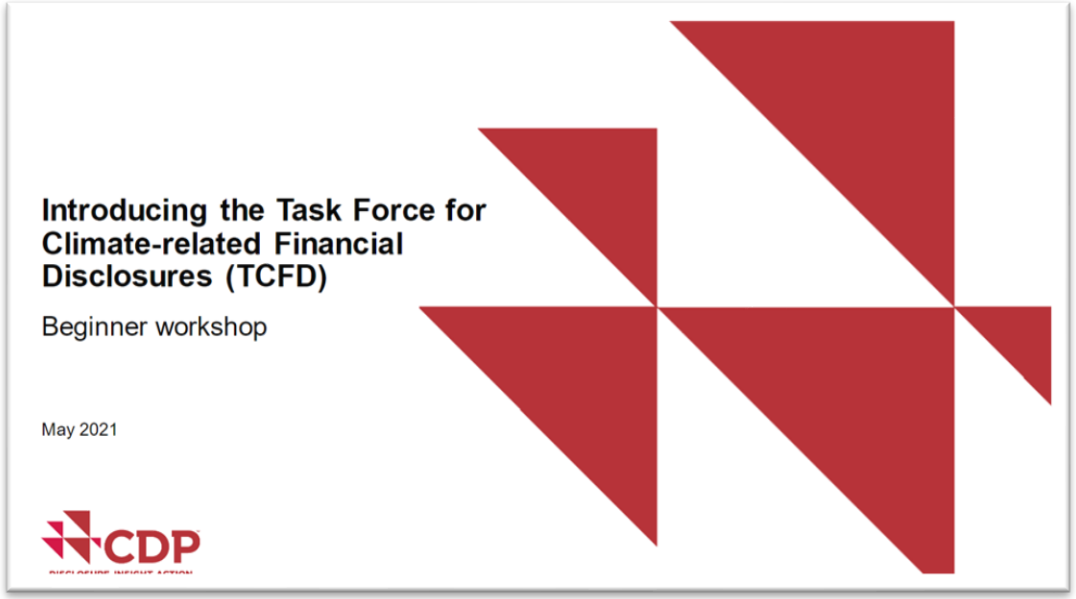
For more information, visit www.ukpact.co.uk

Beginner Workshops

Delivered by CDP and GRI

Recording of workshops can be found here

Day 1 (CDP)



Day 2 (GRI)

For more information, visit www.ukpact.co.uk

Advanced Workshops – round 1

Delivered by CDP and GRI

Recording of workshops can be found here

Day 1 (CDP)

Day 2 (GRI)

TCFD Deep Dive:
Greenhouse Gas (GHG) Accounting

Advanced workshop – Round 2

October 2021

CDP
DISCLOSURE INSIGHT ACTION

Today's Learning Outcomes:

- Become familiar with the basics of GHG Accounting and the GHG Protocol Standards
- Identify key elements of corporate GHG Reporting such as determining organisational boundaries, scope, and what types of data to collect
- Through case studies, understand best practice in corporate GHG accounting and how it can be approached in various scenarios
- Understand GHG accounting in the Thai context
- Take first steps to begin or improve your own GHG Accounting

Thank you to our partners:

British Embassy Bangkok

GRI

SET

Agenda

Time (GMT+7)	Topic	Speaker
1:30-1:45pm	Welcome and Housekeeping	Mr. Fredrik Andersen, CDP
1:45-2:25	Overview of Greenhouse Gas accounting	Mr. Matt Sprague, South Pole
2:25-2:35	Q&A	
2:35-2:45	**Break**	
2:45-3:35	GHG Accounting process for businesses	Mr. Matt Sprague, South Pole
3:35-3:45	Q&A	
3:45-4:00	Thai Greenhouse Gas Management Organisation (TGO) Greenhouse Gas Verification Protocol	Mr. Thada Varoonchotikul, Thailand Greenhouse Gas Management Organization
4:00-4:15	Charoen Pokphand Group's approach to Greenhouse Gas accounting	Mr. Somjettana Pasakanon, Charoen Pokphand Group
4:15-4:30	Q&A Closing remarks	

Overview of Greenhouse Gas Accounting

Mr. Matt Sprague

Associate Director, Principal Consultant - Climate Strategies

South Pole

CDP Capacity Building Webinars
GHG Emissions Accounting

Date

south pole

Speaker

Matt Sprague

Associate Director - APAC
Climate Strategies
South Pole

Curriculum Vitae

Matt is a passionate energy and decarbonisation professional, currently leading South Pole's consulting services for Australian and Asian clients. He is highly focussed on delivering greenhouse gas accounting support and decarbonisation pathways to enable clients to work towards their sustainability and net zero ambitions. As a trusted advisor, Matt works with businesses across all sectors to understand their current carbon emissions and develop reduction targets in-line with international best practice.

With a background in project management, and qualifications in Chemical Engineering, energy and carbon management, and renewable energy, Matt assesses decarbonisation opportunities and energy efficiency projects from initial audit and evaluation through delivery to post-implementation measurement and verification. Matt is excellent at building strong relationships with both technical and commercial clients to identify solutions to complex problems.

Two sessions for today

Session 1: Overview of GHG Accounting

- Background to GHG accounting
- The benefits of GHG accounting
- Overview of the GHG Protocol

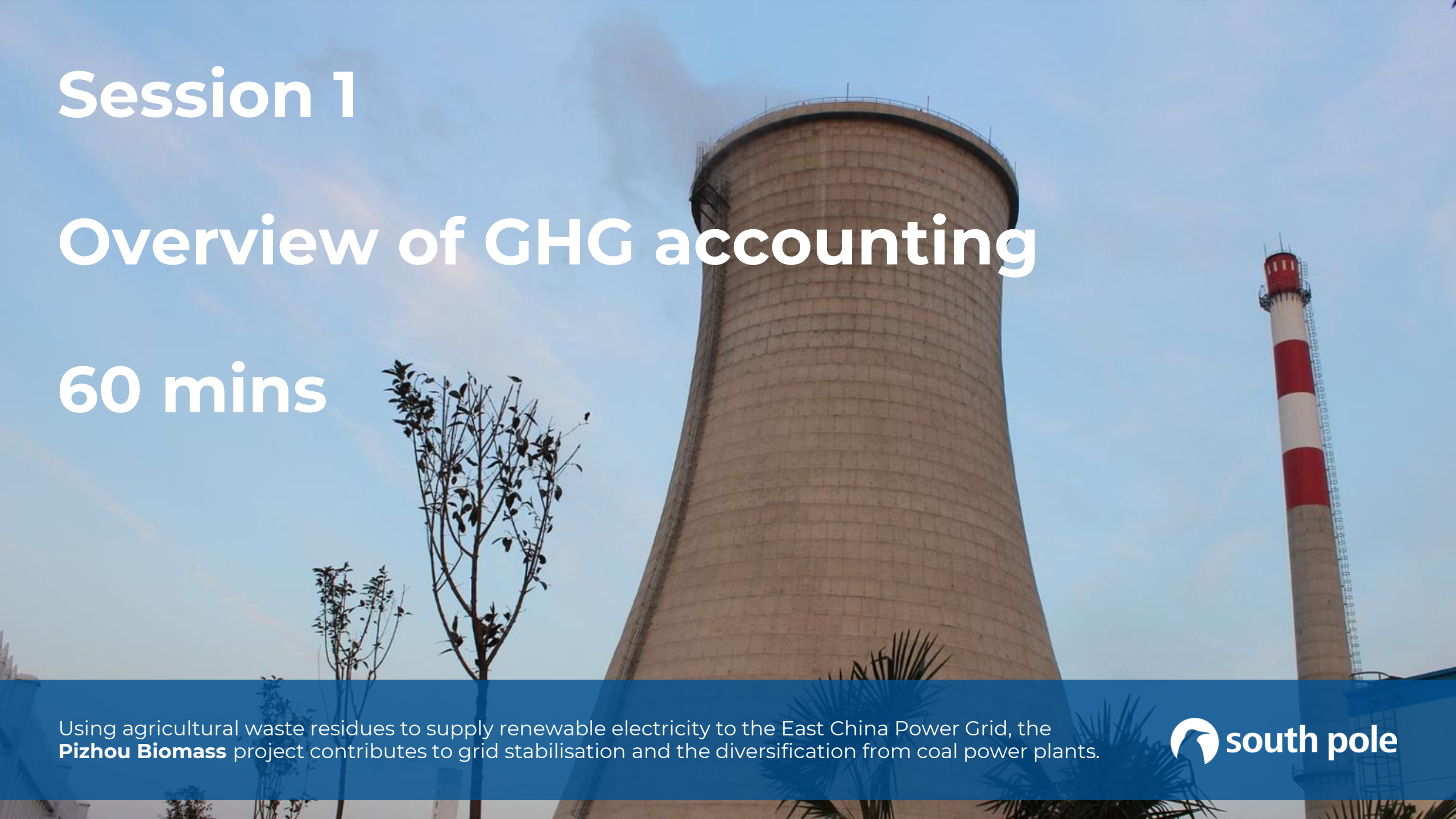
Session 2: GHG Accounting Process for Business

- GHG Accounting Process for business purposes
- Boundaries, scopes and data collection
- GHG reporting
- Common challenges
- Case studies

Session 1

Overview of GHG accounting

60 mins



Using agricultural waste residues to supply renewable electricity to the East China Power Grid, the **Pizhou Biomass** project contributes to grid stabilisation and the diversification from coal power plants.

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Session 1 content

I. Introduction

II. GHG Accounting in a nutshell

III. GHG Protocol standards

IV. Q&A

Introduction: 5 mins

The **Siam Solar Energy** project in central Thailand helps reduce dependency on fossil fuels, improves energy access in rural regions and boosts local economies.

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Who we are

A **profit-for-purpose** company founded in 2006 that enables corporates, capital markets, and the public sector to reduce their impact on **climate change**, while mitigating risk and creating value on their **sustainability journeys**.

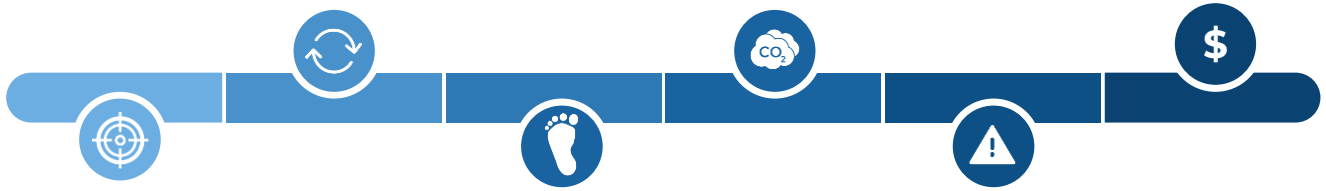
South Pole Climate Solutions

Support along the entire corporate sustainability journey

Renewable Energy
Sourcing and planning

Project Development
Reduce or compensate for your footprint through offsetting & insetting

Funds & Platforms
for innovative climate finance



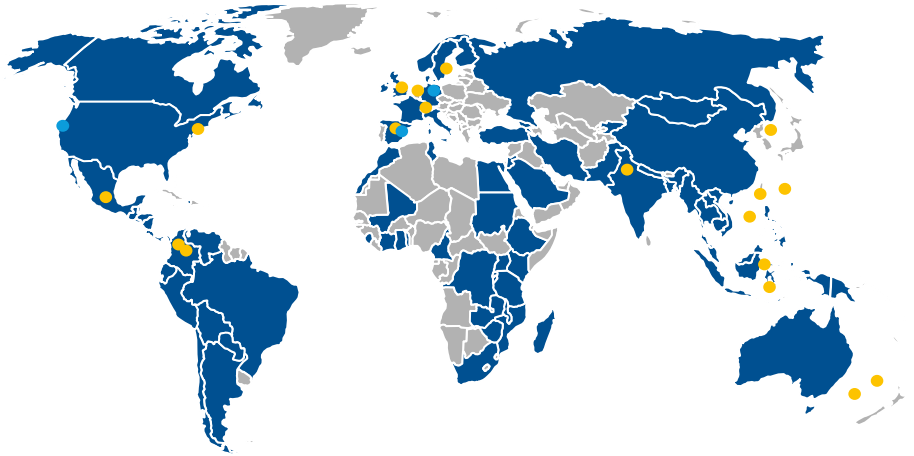
Strategic Advisory
to guide decision-making, targets, and goal-setting

Footprinting & Lifecycle Analysis
to quantify climate impact

Climate Risk
assessments and planning for corporate resiliency

Global Impact - Local Reach

Our staff of 550+ employees in over 28 offices & representations around the world includes engineers, consultants, scientists, project developers, and finance experts.



Our work

140,000
GWh of renewable energy generated

That's equivalent to **21 million** cars taken off the roads

+2 trillion
in investments screened for climate risk
(EUR)

≈1000
carbon emission reduction **projects developed** in over 50 countries

Over **100,000** jobs created

2 million
hectares of forests protected

+170 million
metric tonnes of **carbon dioxide** reduced

€15 billion
invested to advance renewable energy

Pictured: South Pole's Kariba Forest Protection Project in Zimbabwe

The climate journey to net zero

Measure Footprint & risks

Understand your carbon emissions, product impacts and climate change risks

Set roadmap & create targets

Develop sustainability strategies, targets and roadmaps

Reduce footprint

Increase efficiency, procure renewable energy and decarbonise your supply chain

Finance climate action

Finance climate action, e.g. through avoidance and removal of unavoidable emissions or investing in impact funds

Communicate & lead

Engage stakeholders in your sustainability vision and communicate the results

Reasons to do GHG accounting: 5 mins

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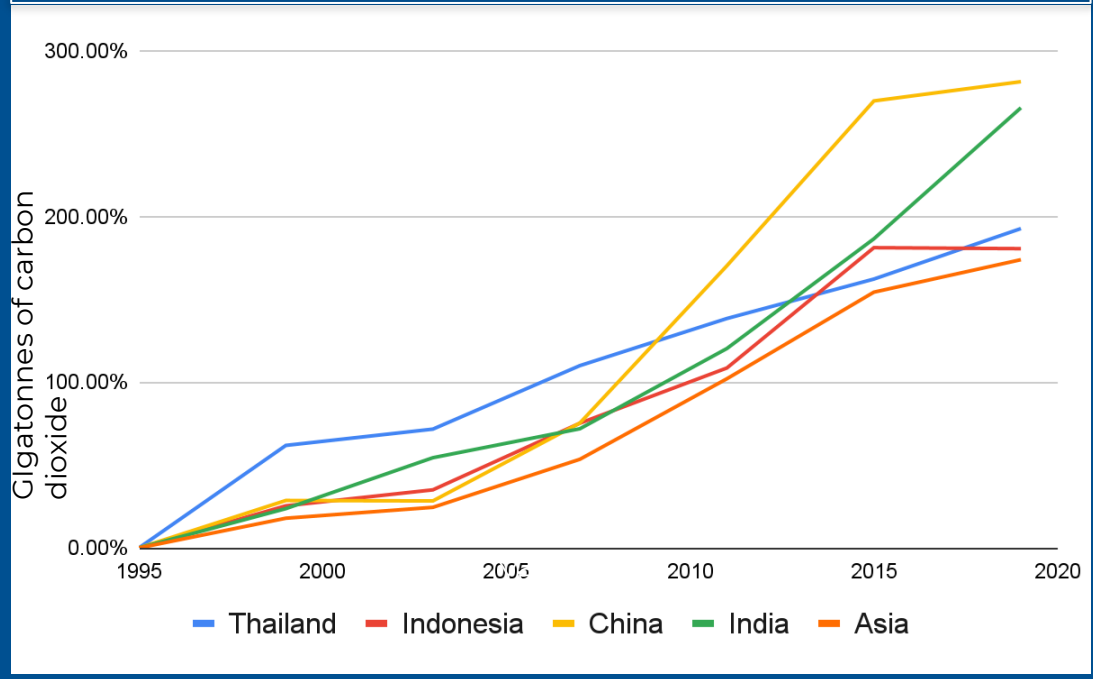
A Global Issue

Asian Carbon Dioxide Emissions Increase by Nation

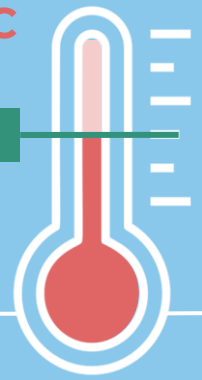


United Nations' scientists have indicated we have **10 years** to **cut global greenhouse gas emissions** before reaching the **point of no return**

Climate Targets

Global greenhouse gas emissions must be cut to reach **net zero emissions** by **2050**, avoiding the current global warming trajectory of **3.5°C**

Limiting warming to **1.5°C** will mitigate worst effects of climate change



Climate Status: Thailand

Thailand's emissions rose by **~200%** between 1990-now, with the highest increase being the energy sector.

Surface temperatures increasing from **0.2 to 0.3** of a degree Celsius per decade

The government's climate target of **20% below business-as-usual** in 2030 is **not in line** with a 1.5°C pathway.

Climate Change 101

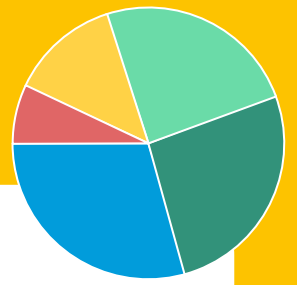
1

Burning fossil fuels
- **Driving / flying**
- **Making goods**
- **Growing food**
- **Generating power**

produce greenhouse gases (GHGs), such as carbon dioxide, into the atmosphere

2

These gases trap the sun's heat in the atmosphere, **warming the planet** and altering the earth's climate over time (aka "climate change")



Thailand GHG Emissions

(By Sector in 2018)

- 61% Energy
- 17% Industry
- 16% Agriculture
- 3% LULUC & Forestry
- 3% Waste

GHG Accounting in a nutshell: 5 mins

Bac Lieu Wind Farm, Vietnam: located on South Vietnam's Mekong Delta, the Bac Lieu wind farm delivers clean wind electricity to the national power grid. It is the first large-scale coastal wind power project in Vietnam, generating approximately 320,000 MWh of renewable wind energy per year and mitigating carbon emissions.

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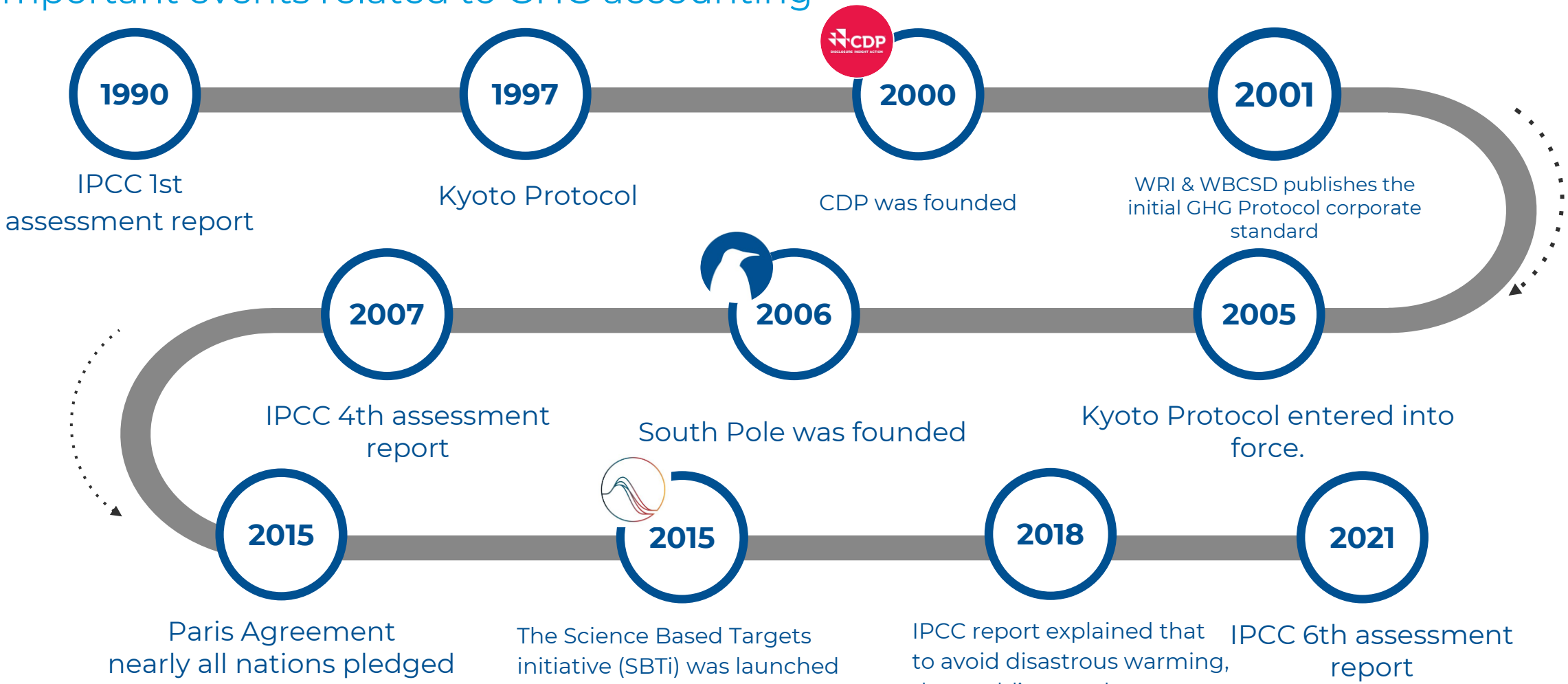
History

Important events related to GHG accounting



Applicable programs and standards

GHG Protocol

GHG Protocol establishes comprehensive global standardized frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations, value chains and mitigation actions.

Science Based Targets

Science-based targets provide a clearly-defined pathway for companies to reduce greenhouse gas (GHG) emissions, Targets are considered ‘science-based’ if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement

ISO 14064-1

ISO 14064 is an international standard for quantifying and reporting greenhouse gas emissions. ISO 14064 is an important reference for conducting a GHG inventory for an organization. ISO 14064 Part 1 establishes a process for quantifying GHG emissions for the inventory.

Net Zero

Net zero carbon dioxide (CO2) emissions are achieved when anthropogenic CO2 emissions are balanced globally by anthropogenic CO2 removals over a specified period. This is achieved by offsetting a company's emissions.

Sector-specific guidelines are available to address GHG sources that are unique to certain sectors

General reasons to do GHG accounting

Business goal served by GHG accounting

Managing GHG risks and identifying reduction opportunities

- Identifying risks associated with GHG constraints in the future
- Identifying cost effective reduction opportunities
- Setting GHG targets, measuring and reporting progress

Public reporting and participation in voluntary GHG programs

- Voluntary stakeholder reporting of GHG emissions and progress towards GHG targets
- Reporting to government and NGO reporting programs, including GHG registries
- Eco-labelling and GHG certification

Participating in mandatory reporting programs

- Participating in government reporting programs at the national, regional, or local level

Participating in GHG markets

- Supporting internal GHG trading programs
- Participating in external cap and trade allowance trading programs
- Calculating carbon/GHG taxes

Recognition for early voluntary action

- Providing information to support “baseline protection” and/or credit for early action

The GHG Protocol: 25 mins

Mahindra, India: Many regions in Asia are significantly impacted by air-pollution. This solar project generates renewable electricity and actively improves the health situation of the local population. This not being enough, the project was able to fund educational initiatives in terms of grants given to schools in the area.

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Introduction to the GHG Protocol

The Greenhouse Gas Protocol was launched in 1998 by:

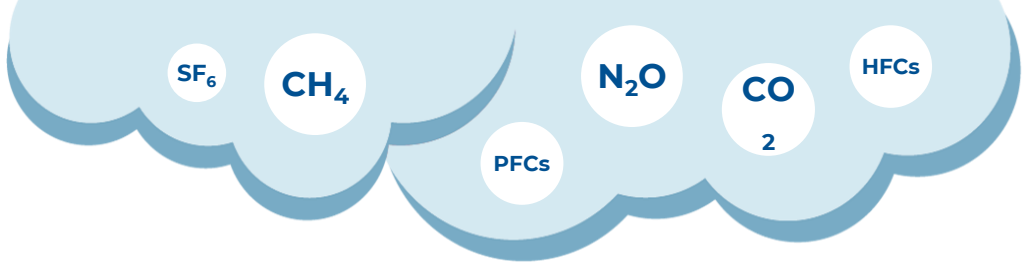
- Multi-stakeholder partnership of businesses, NGOs, governments and others
- GHG Protocol standards are the most widely used accounting tools to measure, manage and report on GHG emissions

The GHG Protocol principles

Relevance	Ensure the **GHG inventory** appropriately **reflects** the **GHG emissions** of the company and serves the **decision-making needs** of users
Completeness	Account for and report on **all GHG emission sources and activities** within the chosen inventory boundary.
Consistency	Use **consistent methodologies** to allow for meaningful comparisons of emissions over time. **Transparently document** any changes to the data, inventory boundary, methods, or any other relevant factors in the time series.
Transparency	Address **all relevant issues** in a factual and coherent manner, based on a clear audit trail. **Disclose any relevant assumptions** and make appropriate references to the accounting and calculation methodologies and data sources used.
Accuracy	Ensure that the quantification of GHG emissions is **systematically** neither over nor under actual emissions, as far as can be judged, and that **uncertainties are reduced** as far as practicable.

Methodology

The GHG Protocol



SCOPE 2
Indirect

Purchased Electricity, Steam, Heat & Cooling

SCOPE 3
Indirect

Leased Facilities

Employee Commuting

Business Travel

Operational Waste

SCOPE 1
Direct

Energy/Heat Generation at Company Facilities

Company Vehicles

Fugitive Emissions

SCOPE 3
Indirect

Transport & Distribution

Processing of Sold Products

Use of sold Products

End of Life for Products

Leased Facilities

Franchises

Investments

The GHG protocol considers the whole of an organisation's supply / value chain.

Purchased Goods/Services

Capital Goods

Transport & Distribution

Fuel/Energy Related

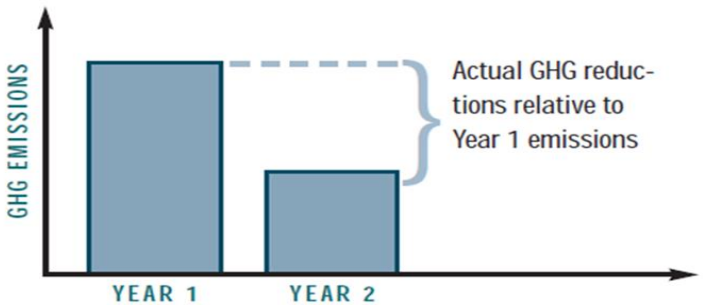
Upstream Activities

Downstream Activities

Three types of GHG Accounting

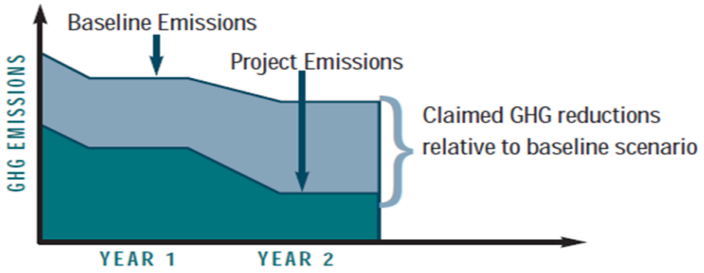
1. Entities

- Combines emissions data across an **organisation's operations**
- **Emissions** have mostly **already occurred**
- Emissions data **compared** with **prior base year**



2. Projects

- Quantifies **emissions avoided by a project** in the future
- Impact **estimated through baseline comparison** ("what if?" scenario)



3. Products

- **Life Cycle Assessment** (LCA)
- Combines data from **past and future emissions across all phases** of individual **product or service**
- Emissions data **compared** with **prior base year**

Sources: GHG Protocol 2005, Green Education Foundation 2018

Carbon footprint

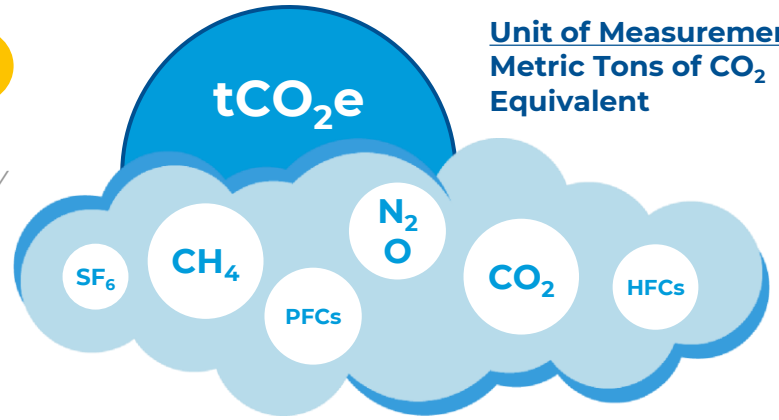
Carbon Footprint: The total amount of greenhouse gases emitted by an activity or organization over time, measured in tons of carbon dioxide equivalent (tCO_2e)

A **carbon footprint** is calculated by multiplying:

Energy Used X **Emission Factor**

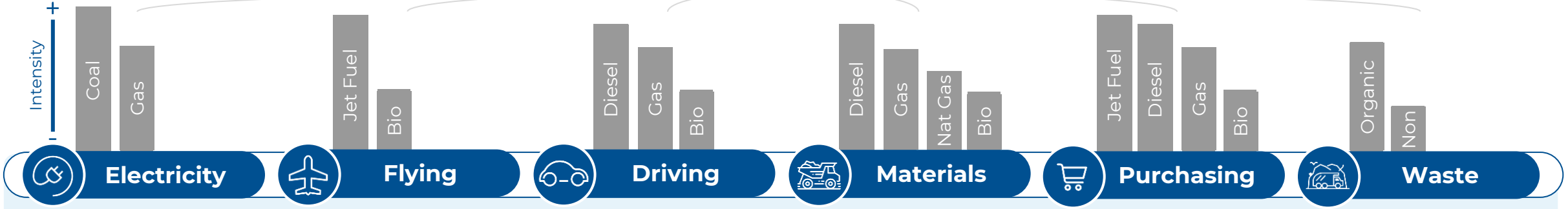
Total energy or fuel consumed | *Amount of emissions produced per unit of energy*

Each fuel type (coal, gas, etc.) emits different amounts of carbon dioxide into the atmosphere per unit used, known as its **energy intensity**



Unit of Measurement:
Metric Tons of CO_2 Equivalent

Each greenhouse gas has a varying ability to trap heat in the earth's atmosphere over a period of time, known as its **global warming potential**



Electricity

Energy is used to generate power

Flying

Fuels are used to power aircrafts

Driving

Fuels are used to power vehicles

Materials

Fuels are used in sourcing & manufacturing goods

Purchasing

Fuels are used to transport goods globally

Waste

GHGs are emitted as waste decomposes in landfills

Emissions factors & GWP

Global Warming Potential (GWP)

- Global warming potential (GWP): measure of how much a greenhouse gas contributes to global warming relative to CO_2
- Use GWPs to convert tonnes of a GHG to tonnes of carbon dioxide equivalent (CO_2e) to calculate total emissions using a common unit

Emission Factors (EF)

- Emission factors convert activity data to emission values
- Published by various entities, including government agencies and intergovernmental organizations
- Usually expressed as *CO_2 eq/kg*, *CO_2 eq/litres*, etc.

GHG	GWP
CO_2	1
CH_4	21
N_2O	310
HFCs	140 - 11,700
PFCs	6,500 - 9,200
SF_6	23,900

Mass CO_2 Eq. = (mass of gas) x (GWP)

Q&A

Break

GHG Accounting Process For Businesses

Mr. Matt Sprague

Associate Director, Principal Consultant - Climate Strategies

South Pole

Session 2

GHG Accounting Process for Business

60 mins

Pictured: South Pole's Infravest Guanyin Wind project in Taiwan helps fortify the island's energy security by reducing its dependence on imported fossil fuels

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Session 2 content

I. Defining organisational boundaries & scopes

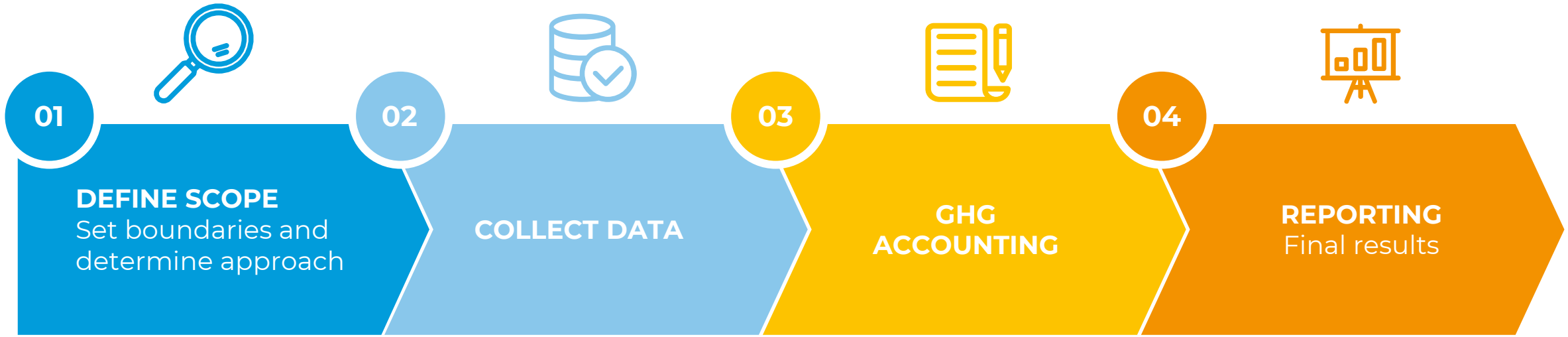
II. Data collection

III. Reporting GHG emissions

IV. Case studies

V. Q&A

The GHG Accounting Process



Defining organisational boundaries and scopes: 5 mins

Makira forest protection, Madagascar: This project safeguards one of the largest remaining continuous expanses of humid rainforest in Madagascar, protecting 360,000 hectares of dense primary forest of the Makira Natural Park.

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Organisational boundaries

Why are organisational boundaries important?

Complex business structure

- **Subsidiaries**
- **Joint ventures**
- **Franchises**
- **Suppliers**

Two approaches

1

Equity shares

Under the equity share approach, a company accounts for GHG emissions from operations according to its share of equity in the operation.

2

Control approach

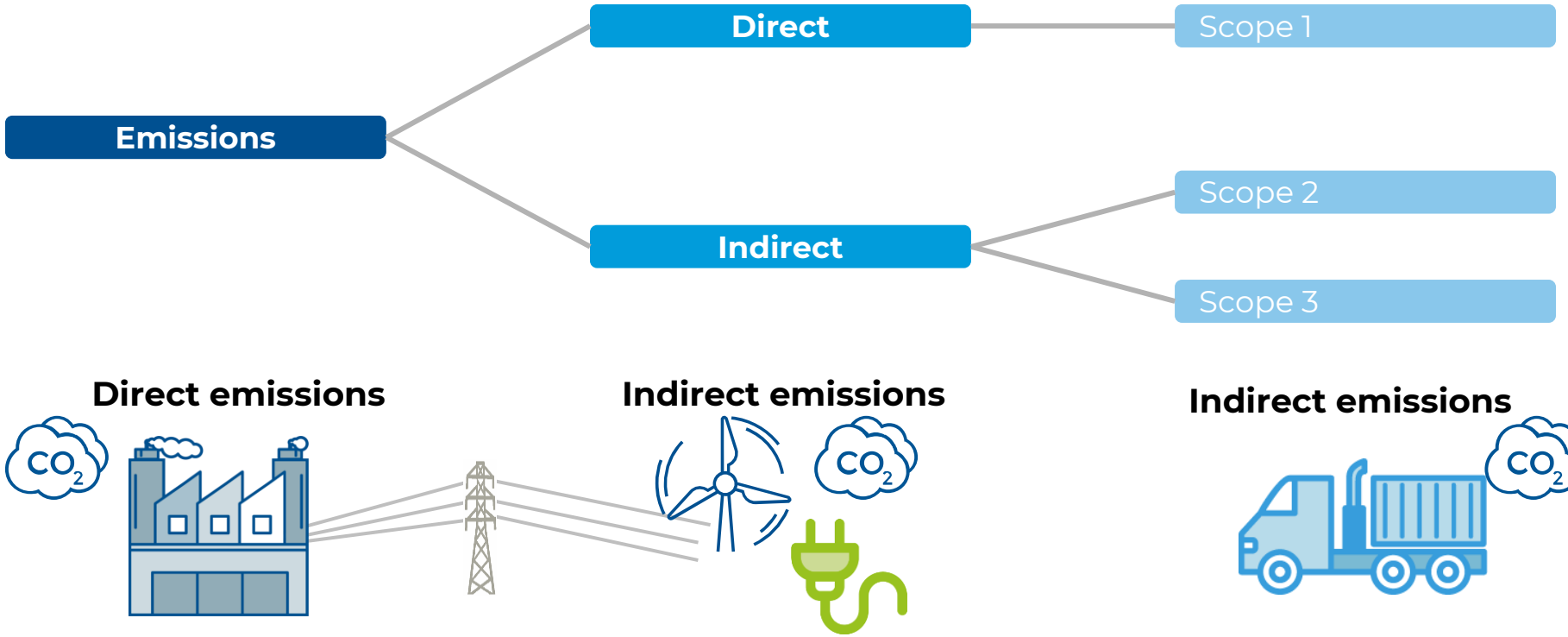
Under the control approach, a company accounts for 100 percent of the GHG emissions from operations over which it has control. It does not account for GHG emissions from operations in which it owns an interest but has no control. Control can be defined as:

- Financial control
- Operational control

To measure emissions consistently, selected approach should be applied across entire organisation

Operational boundaries

- **Direct:** emissions from sources owned or controlled by the reporting company
- **Indirect:** emissions that are a consequence of the activities of the reporting company but occur at sources owned or controlled by another company



Determining which scopes to include: 5 mins

Salavatli Geothermal Energy, Turkey: this project has the unique approach of generating renewable energy and additionally delivering the waste heat directly to local greenhouses, increasing the yields and promoting sustainable agriculture. The plant produces electricity equalling the consumption of 8.000 European households and created and secures 25 jobs.

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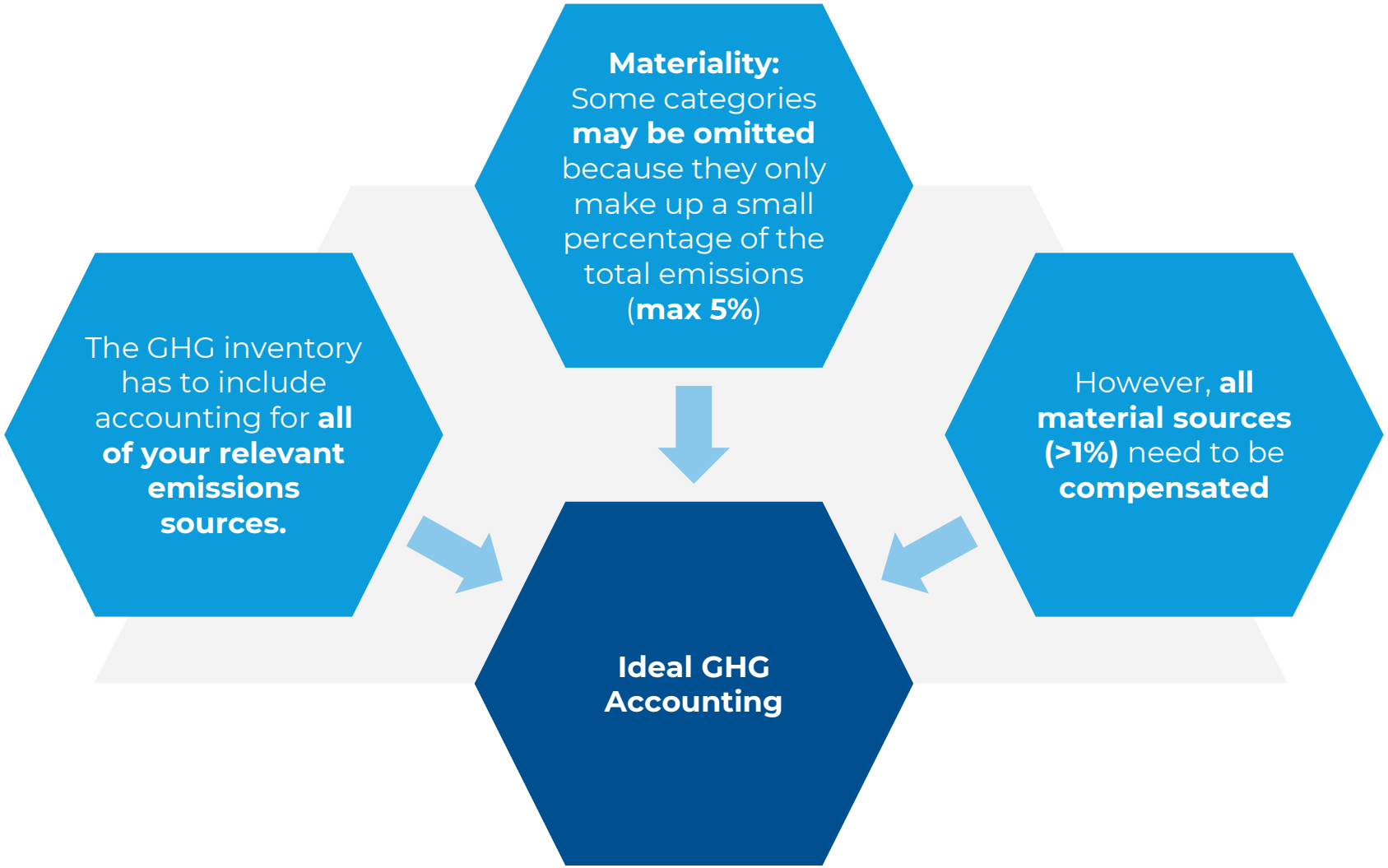
Completeness of GHG Scoping

Depending on company and type of accounting done (corporate, project, product)



Spotlight on: Fashion & Textiles

Fashion Industry Supply Chain:

Raw Material Production
Invest in insetting projects

Raw Material Processing
Water stewardship

Textile Manufacturing
Water stewardship

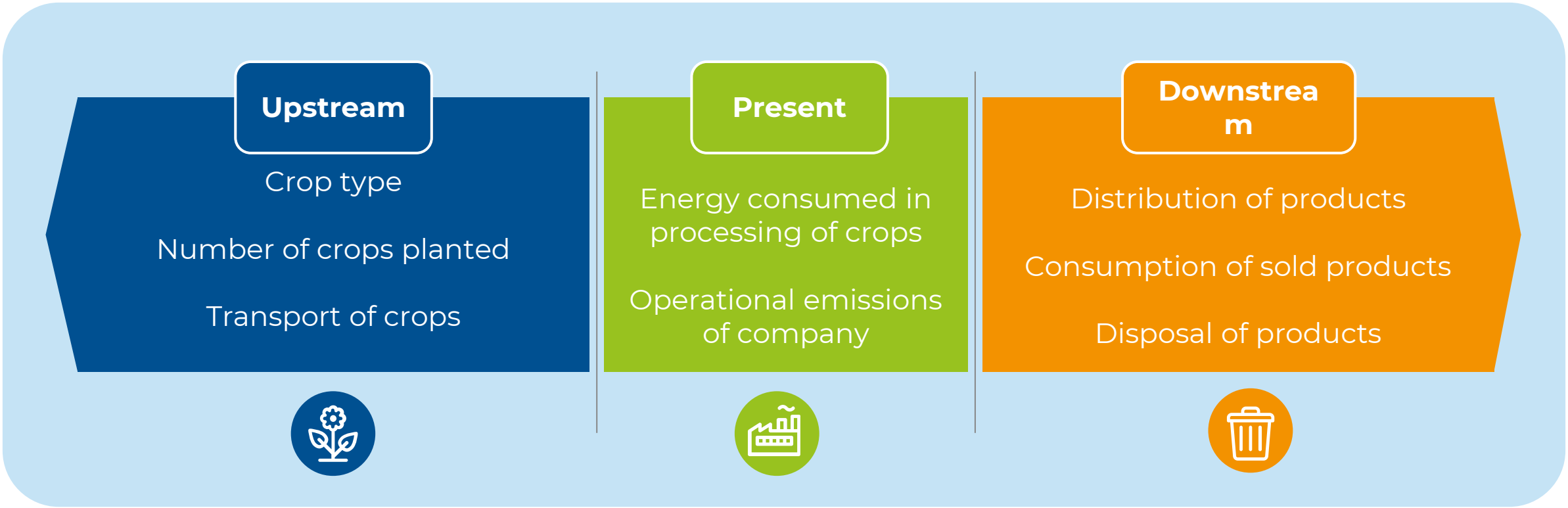
Offices, Retail & Distribution Centers
Establish renewable energy targets

Garment Manufacturing
Collaborate with suppliers energy efficiency

Logistic Service Providers:
Develop strategies to decrease emissions in downstream and upstream logistics

Spotlight on: Agriculture & Food

Products in agriculture can be assessed for past, present and future emissions for **upstream and downstream** elements of a crop **life cycle**.



Spotlight on: Tourism & Aviation

Air travel

Number of flights, classes of seating occupied (economy, business, first), distance between airports

Hotels and accomodation

Hotel rating (4 star, 5 star), number of rooms occupied, city or country of accomodation

Food and beverages

Number of meals consumed, types of meals consumed (breakfast, lunch dinner), vegetarian or non-vegetarian, number and type of beverages (alcoholic or non-alcoholic)

Data collection: 10 mins

Isangi Forest Conservation, Congo: the Isangi project in northern Congo is a project that covers a variety of breakthrough improvements in terms of carbon sequestration, biodiversity, education, health and food security. 11% of the world's bird species are recorded in this area and protected with the Isangi project, in addition to three schools built and +397 jobs created.

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Data collection

A collective and iterative process

Two types of data can be used in the accounting:

Primary data

- is actual consumption data provided by company, its suppliers, customers or other organisations relevant to its activities. Examples of primary data sources are purchased electricity, energy consumption, transportation distances, amount and types of material used, etc.

Secondary Data

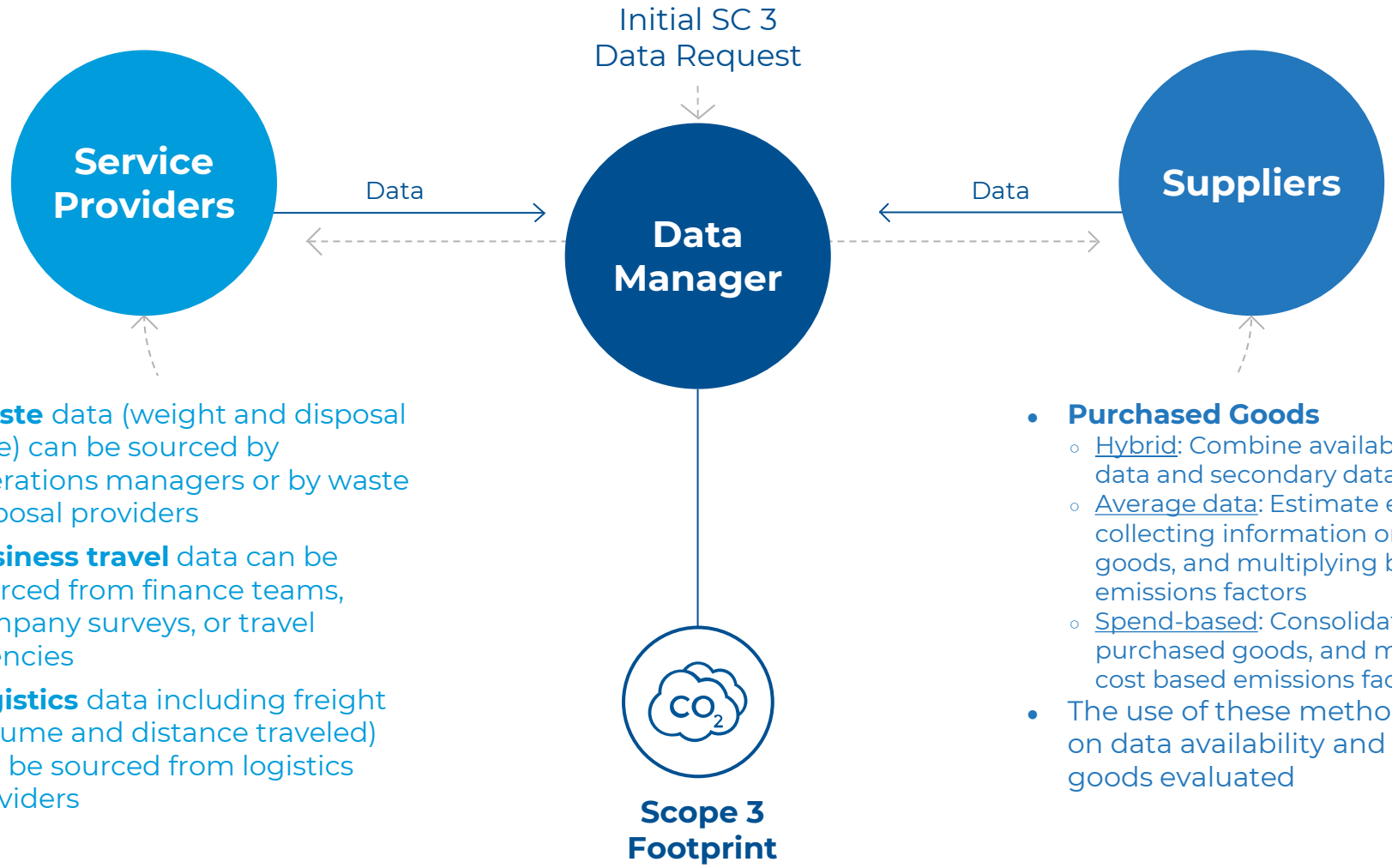
- includes industry and national average data as well as statistics.

How to collect and provide data

- The required data are usually provided by the reporting organization, preferably collected from staff members with direct access to the relevant data
  - Example: purchased goods and services data can be obtained from procurement team
- In our work, South Pole will brief relevant staff on the different data categories, and provide our clients with data collection sheets
- If necessary,assumptions and extrapolations might be needed

Collecting and Measuring Scope 3

Methods for data collection and emissions calculation



- **Waste** data (weight and disposal type) can be sourced by operations managers or by waste disposal providers
- **Business travel** data can be sourced from finance teams, company surveys, or travel agencies
- **Logistics** data including freight (volume and distance traveled) can be sourced from logistics providers

- **Purchased Goods**
  - Hybrid: Combine available supplier activity data and secondary data to fill any gaps
  - Average data: Estimate emissions by collecting information on mass or units of goods, and multiplying by available emissions factors
  - Spend-based: Consolidate costs of purchased goods, and multiply by available cost based emissions factors
- The use of these methods is dependent on data availability and the types of goods evaluated

Common challenges in data collection

Our experience in corporate accounting

Data from suppliers are often not uniform, data are also often not readily available due to poor recording

Data depth is too low → many assumptions have to be developed hence decrease the accounting quality

Multiple data "owners" which creates conflicts in data assessment

Several actions that can be taken:

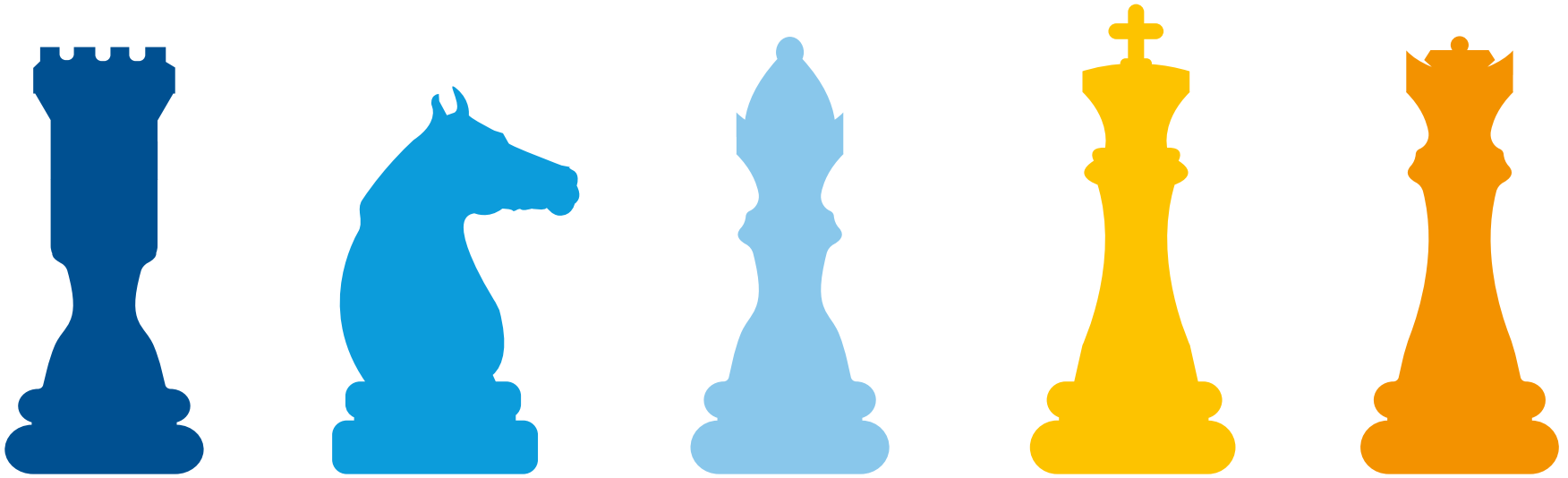
- Ensure data storage and management
- Identify the details needed for each emissions category, give priority to material emissions
- Focus to obtain primary data from supply chain, for smaller category, secondary data can be used

Reporting GHG emissions: 10 mins

Vichada Forest Restoration, Colombia: planting 80 million trees was at the core of the Vichada project, located in the Orinoco river at the border between Venezuela and Colombia. Colombia is one of the most valuable regions in the world in terms of biodiversity and ecosystems, which is why South Pole planted 13,205 ha and conserved 8,089 ha of forest, creating 80 new jobs.

south pole

GHG Protocol reporting basics



Relevant **Complete** **Consistent** **Transparent** **Accurate**

The report should:
Be based on **best available data** at time of publication
Acknowledge **limitations**
Communicate any identified past errors
Include **company's gross emissions separately** from any GHG trades/offsets

GHG Reporting contents

Required information

A public GHG emissions report that is in accordance with the GHG Protocol Corporate Standard shall include
the following information:

- Company description, reporting period covered, any exclusions of sources or operations
- Organizational boundary, consolidation approach, Operational boundaries (if scope 3 included, list activity types covered), Calculation methodologies
- Base year and emissions profile over time
- Total Scope 1 and 2 emissions (independent of any offsets, allowances, etc.), emissions of all 7 GHGs separately
- Context for any base year recalculations

Optional information

A public GHG emissions report should include, when applicable, the following additional information:

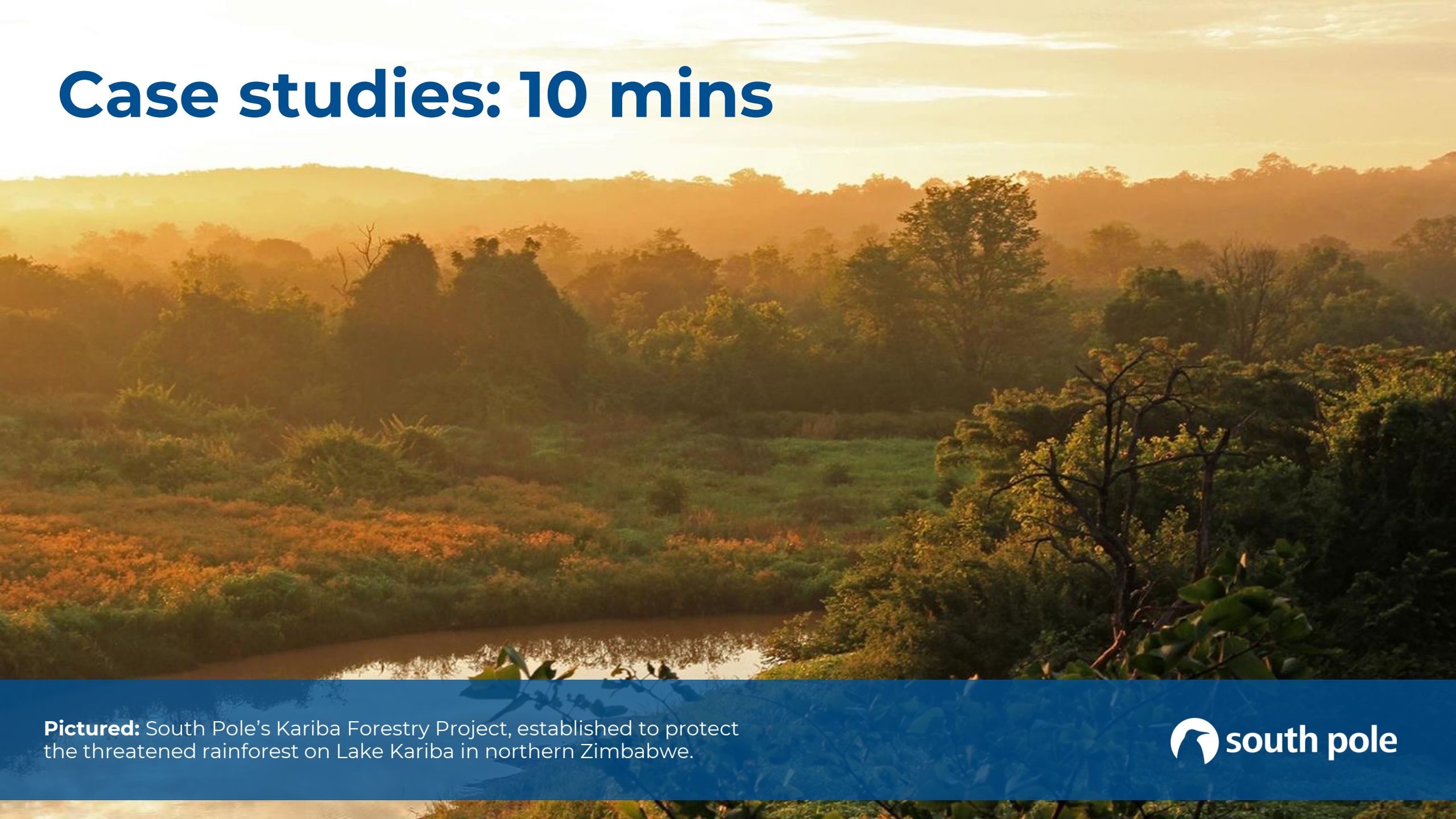
- Scope 3 emissions
- Emissions further disaggregated by facility, country, source or activity type, emissions from non-Kyoto GHGs
- Ratio performance indicators (e.g., tCO2e/employee, tCO2e/m2)
- Outline of any GHG management programs or strategies, copy of any verification statement
- Info on inventory quality (e.g., uncertainties, policies to improve quality)
- Info on any GHG sequestration
- Information on offsetting

Common reporting structure

Typical reporting structure

- **Executive summary**
  - Brief explanation of the results, summary of KPIs hotspots
- **Introduction**
  - Company profile
  - Methodology
  - System boundaries, data inventory
- **Results**
  - Recapitulation of results
  - Table and visualizations of emissions
- **Recommendations**
  - List of activities that can be done to improve data quality for next accounting
- **Annexes**
  - EF references
  - Data assumptions
  - Data extrapolations

Case studies: 10 mins

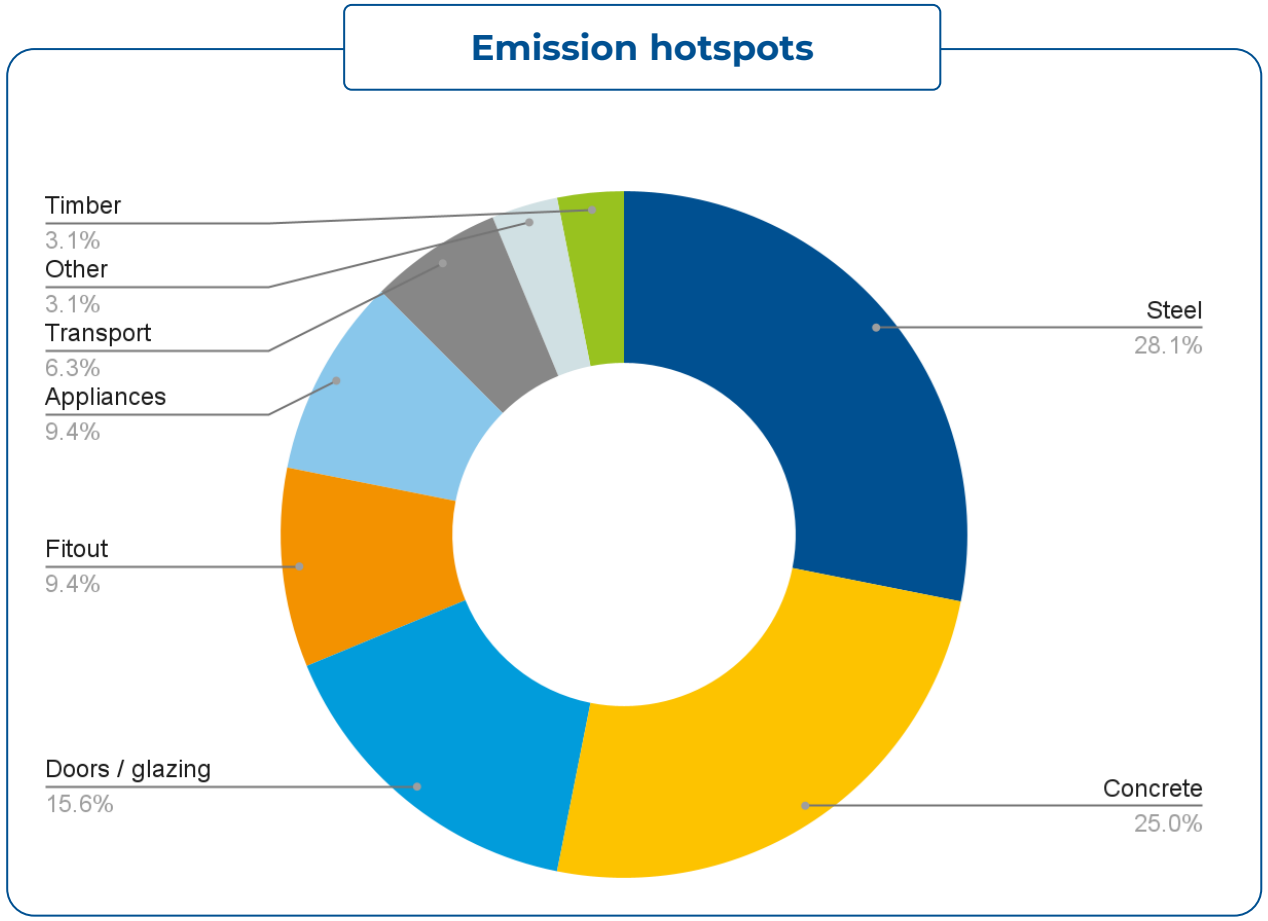


Pictured: South Pole's Kariba Forestry Project, established to protect the threatened rainforest on Lake Kariba in northern Zimbabwe.

south pole

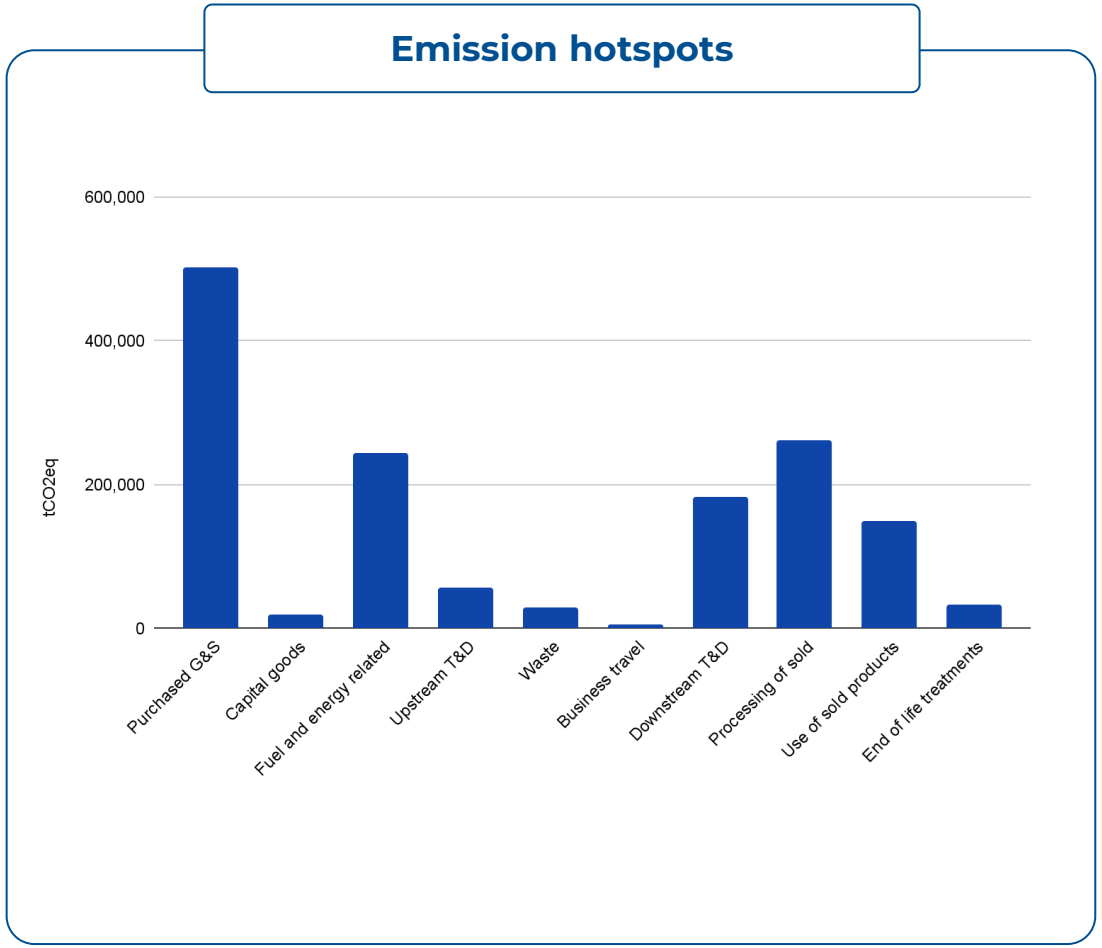
Construction industry

- The main hotspot for construction industries are from **Scope 3** mainly from **procurement of steel and concrete** to construct buildings' foundations and roofings.
- The other significant emission sources come from **fitout** (cladding, painting, finishing, and insulation) and **appliances**
- Emissions from **timber and transporting material** are comparably smaller



Retail industry

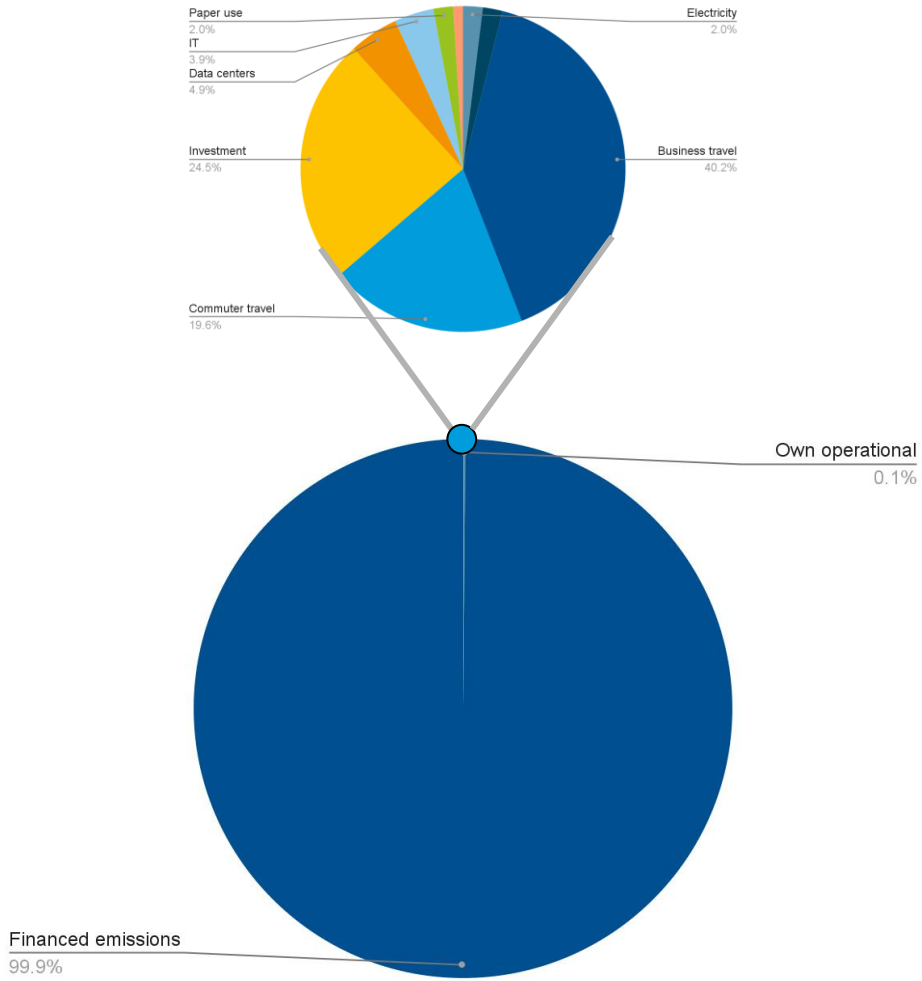
- **Retail industries** are type of business which usually has a significantly **higher Scope 3** compared to Scope 1 and Scope 2
- **Purchased goods and services** usually dominates the emission profile of retail industry, mainly from the **procurement of products**, **intermediates and/or raw materials**
- Depending on the **electricity source**, fuel and energy related emission might be high
- Depending on the **type of business**, either **upstream or downstream** transportation would also be significant
- **Processing of sold products** might be high if retailers offer many **intermediate products**. On the other hand, if it offers many **finished products**, the **use of sold products** emission might be materialistic



Financial industry

- Financial industry usually has **lower Scope 1** compared to other industries. The Scope 3 mainly becomes the highest emission source
- Emissions from **business travel and commuter travel** are significant due to the high activity within this sector
- Uniquely, based on CDP's reports on 2021, **finance sectors' financed emissions** (portfolios) are over **700 times greater** than its own operation

Emission hotspots




THE CLIMATE IS CHANGING
ARE YOU?
south pole

Q&A

Thai Greenhouse Gas Management Organisation (TGO) Greenhouse Gas Verification Protocol

Mr. Thada Varoonchotikul

Manager (Carbon Label Project)

Thailand Greenhouse Gas Management Organization

Thailand Greenhouse Gas Management Organization (TGO)

Greenhouse Gas (GHG) Verification Protocol

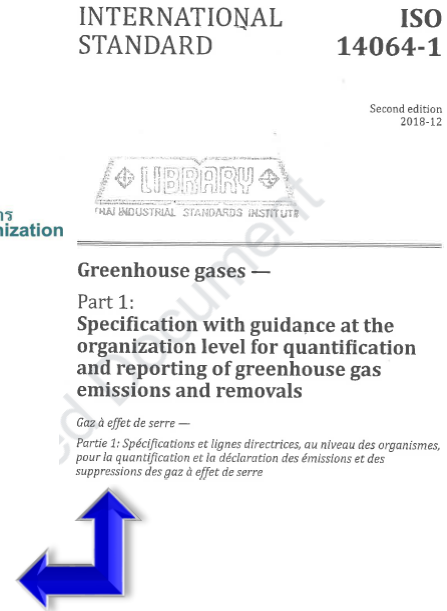
Mr. Thada Varoonchotikul

Content

- Carbon Footprint Guideline
- Registration process
- Information Linkage

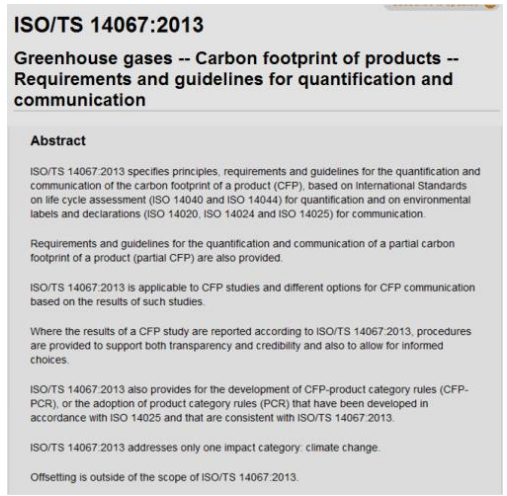
Carbon Footprint Guideline

Carbon Footprint for Organization (CFO) : 2021



CF Calculator
Thailand Greenhouse Gas Manageme..
UNINSTALL
OPEN

Carbon Footprint for a person : 2014



Carbon Footprint of Product (CFP) : 2020

Certified Companies by TGO

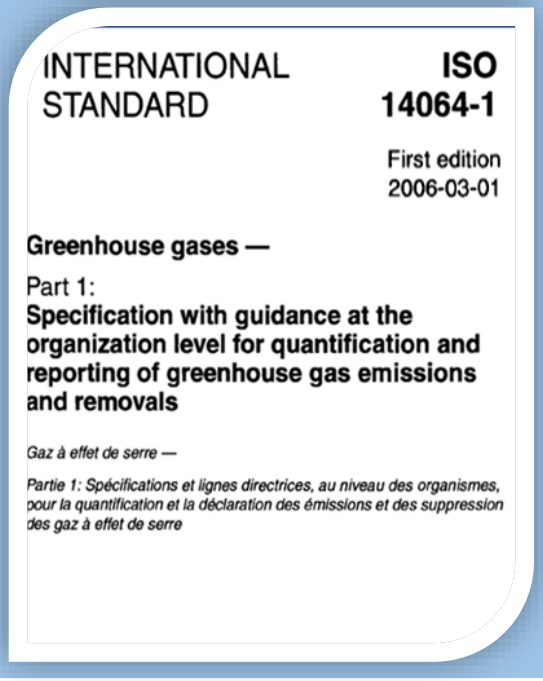
Project Statistics	
2021	total
187 organization	598 organization

Information as of 1 October 2021

Industry sector	Number (company)
Service sector and office	128
Food and beverage industry	111
Power generation and generation industry	64
Petroleum and petrochemical and chemical industries	51
Electronics industry	28
Plastics and packaging industry	34
Other	182

Carbon Footprint for Organization (CFO)

Carbon Footprint of Organization (CFO) is the quantity of GHG emissions and removals as a result of an organization's activities, demonstrated in terms of tone or kilogram of carbon dioxide equivalent.


INTERNATIONAL STANDARD

ISO 14064-1

First edition 2006-03-01

Greenhouse gases —

Part 1:
Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals

Gaz à effet de serre —

Partie 1: Spécifications et lignes directrices, au niveau des organismes, pour la quantification et la déclaration des émissions et des suppression des gaz à effet de serre

Organizations can measure their GHG emissions by using "Guideline for carbon footprint assessment for the organization"

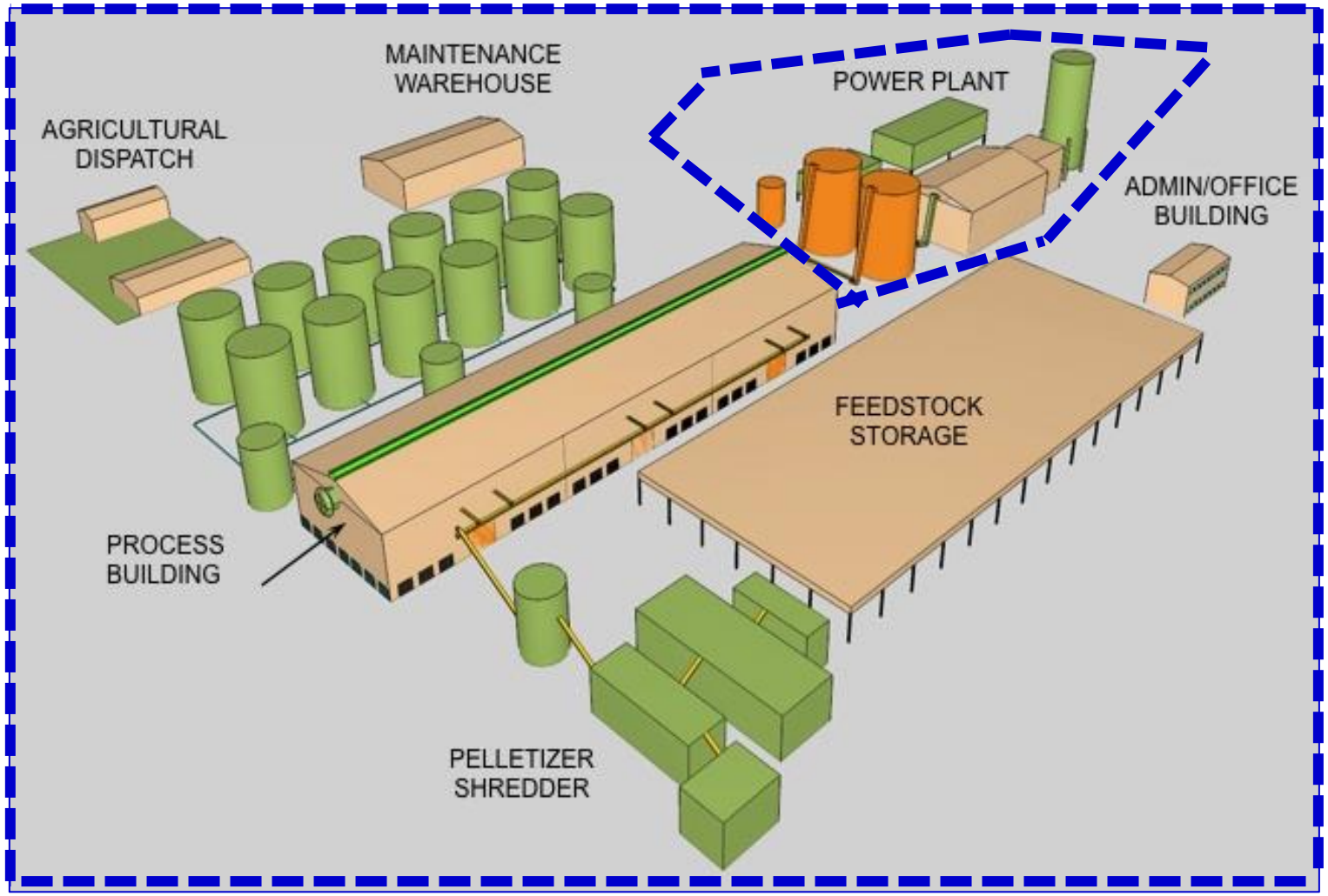
TGO Guidance of the carbon footprint for organization

Registration process

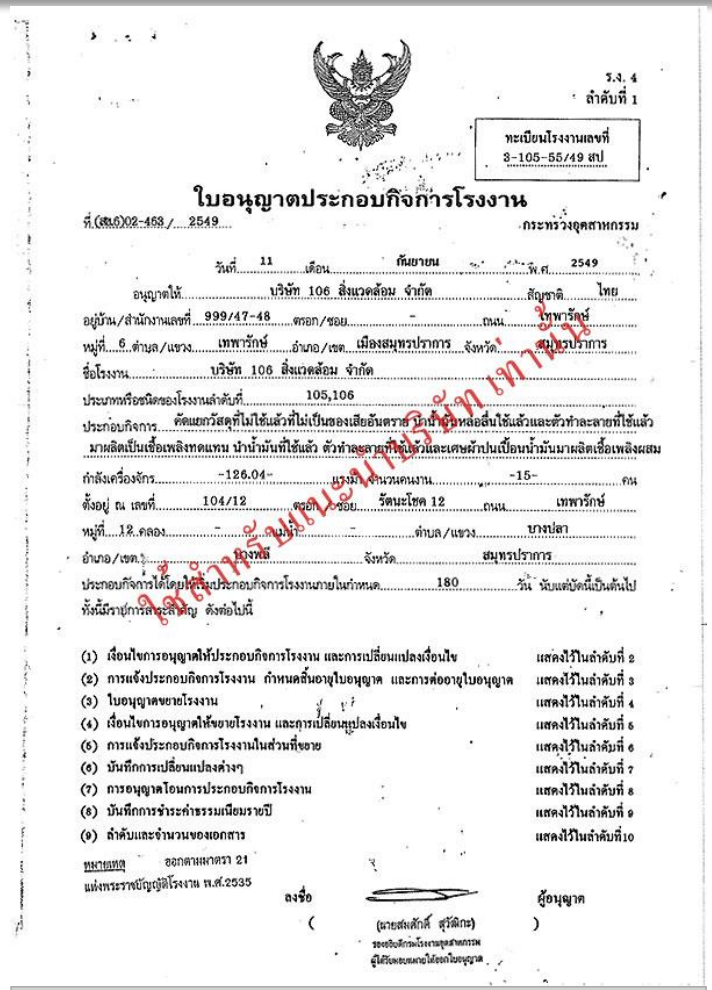
1. Set reporting scope
2. Set organization boundaries
3. Set operational boundary for organization
4. Calculation
5. Documentation
6. Verification
7. Registration

CFO

Step 1: Set reporting scope



Note: According to the factory business license factory registration



ใบอนุญาตประกอบกิจการโรงงาน

ทะเบียนโรงงานเลขที่ 3-105-55/49 สป

กระทรวงอุตสาหกรรม

วันที่ 11 เดือน กันยายน พ.ศ. 2549

อนุญาตให้ บริษัท 106 สิ่งแวดล้อม จำกัด สัญชาติ ไทย

อยู่บ้าน/สำนักงานเลขที่ 999/47-48 ตรอก/ซอย - ถนน เทพารักษ์

หมู่ที่ 6 ตำบล/แขวง เทพารักษ์ อำเภอ/เขต เมืองสมุทรปราการ จังหวัด สมุทรปราการ

ชื่อโรงงาน บริษัท 106 สิ่งแวดล้อม จำกัด

ประเภทหรือชนิดของโรงงานลำดับที่ 105,106

ประกอบกิจการ คัดแยกวัสดุที่ไม่ใช้แล้วที่เป็นของเสียอันตราย น้ำมันหล่อลื่นใช้แล้วและตัวทำละลายที่ใช้แล้ว มาผลิตเป็นเชื้อเพลิงทดแทน น้ำมันที่ใช้แล้ว ตัวทำละลายที่ใช้แล้วและเศษผ้าปนเปื้อนน้ำมันมาผลิตเชื้อเพลิงผสม

กำลังเครื่องจักร -126.04- แรงม้า จำนวนคนงาน -15- คน

ตั้งอยู่ ณ เลขที่ 104/12 ตรอก/ซอย รัตนะโชค 12 ถนน เทพารักษ์

หมู่ที่ 12 คลอง - หมู่ - ตำบล/แขวง บางปลา

อำเภอ/เขต บางพลี จังหวัด สมุทรปราการ

ประกอบกิจการได้โดยไม่ต้องประกอบกิจการโรงงานภายในกำหนด 180 วัน นับแต่บัดนี้เป็นต้นไป

ทั้งนี้มีรายการสำคัญ ดังต่อไปนี้

(1) เงื่อนไขการอนุญาตให้ประกอบกิจการโรงงาน และการเปลี่ยนแปลงเงื่อนไข แสดงไว้ในลำดับที่ 2
(2) การแจ้งประกอบกิจการโรงงาน กำหนดสิ้นอายุใบอนุญาต และการต่ออายุใบอนุญาต แสดงไว้ในลำดับที่ 3
(3) ใบอนุญาตขยายโรงงาน แสดงไว้ในลำดับที่ 4
(4) เงื่อนไขการอนุญาตให้ขยายโรงงาน และการเปลี่ยนแปลงเงื่อนไข แสดงไว้ในลำดับที่ 5
(5) การแจ้งประกอบกิจการโรงงานในส่วนที่ขยาย แสดงไว้ในลำดับที่ 6
(6) บันทึกการเปลี่ยนแปลงต่างๆ แสดงไว้ในลำดับที่ 7
(7) การอนุญาตโอนการประกอบกิจการโรงงาน แสดงไว้ในลำดับที่ 8
(8) บันทึกการชำระค่าธรรมเนียมรายปี แสดงไว้ในลำดับที่ 9
(9) ลำดับและจำนวนของเอกสาร แสดงไว้ในลำดับที่10

หมายเหตุ ออกตามมาตรา 21 แห่งพระราชบัญญัติโรงงาน พ.ศ.2535

ลงชื่อ ( ) ผู้อนุญาต

EX:
By organization's legal evidence
Eg. Factory - Manufacturing license
Office - Commercial registration

Step 2: Set organization boundaries

Organizational boundaries

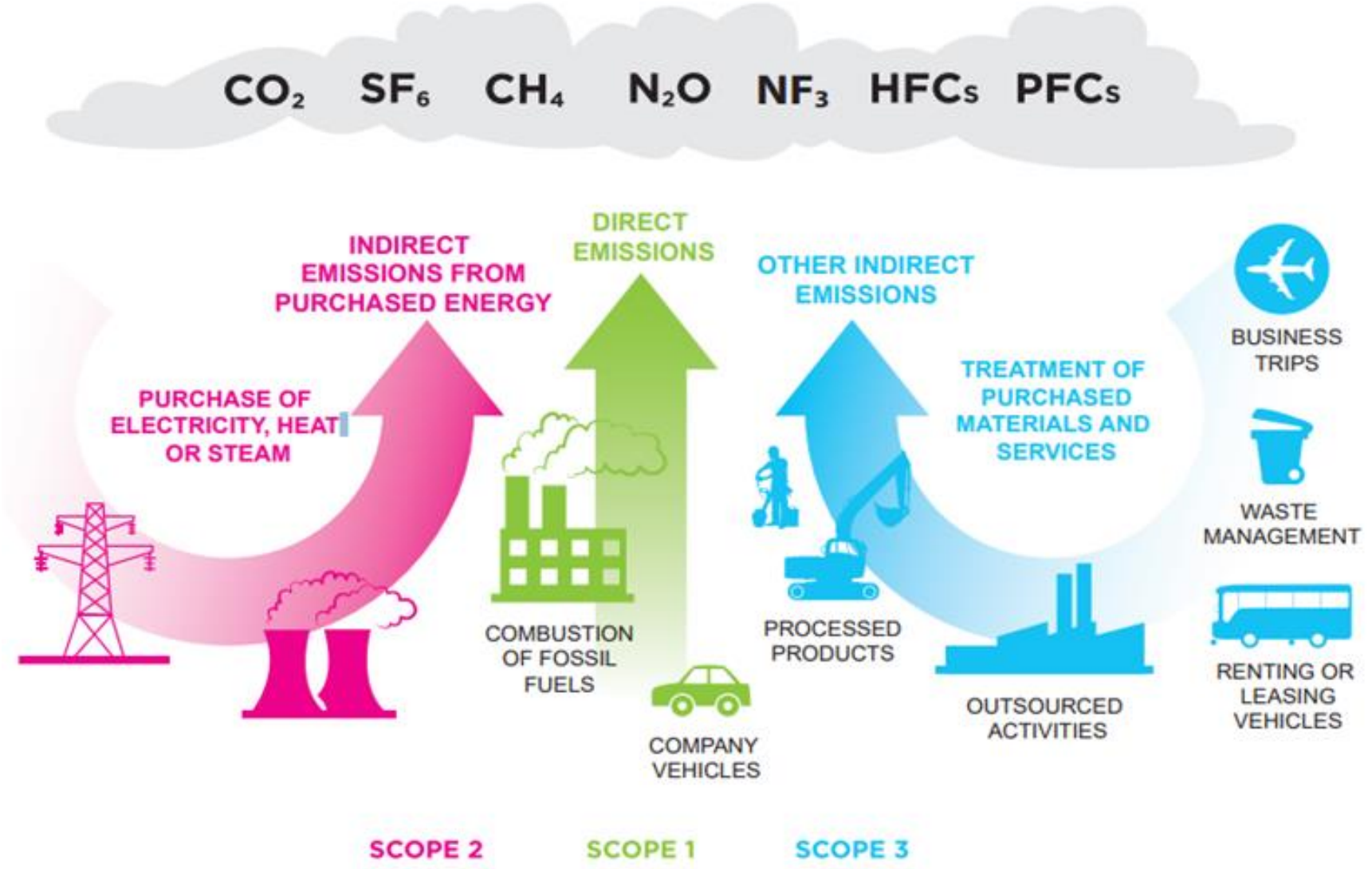
Control Approach

>> Operational control

>> Financial control

Equity Share

Step 3: Set operational boundary for organization

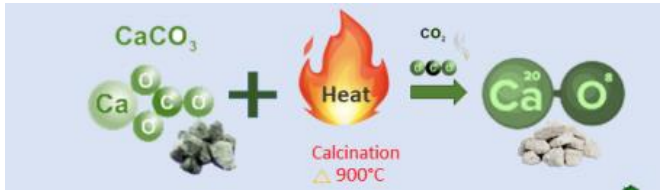


Source: https://www.savemoneycutcarbon.com/learn-save/what-is-the-difference-between-scope-1-2-and-3-emissions/

Scope1: Direct GHG Emissions and Removals

1) Stationary Combustion / Industrial processes



CO_2, CH_4, N_2O

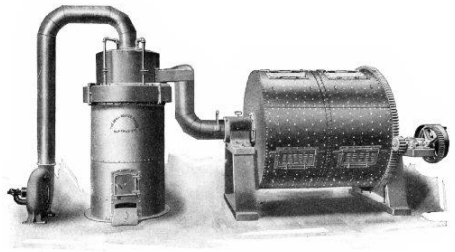
2) Mobile Combustion

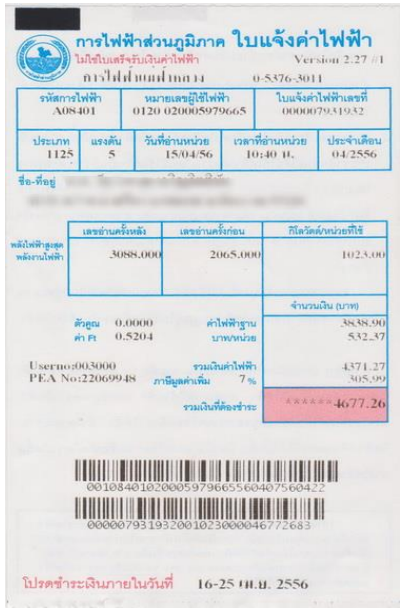

CO_2, CH_4, N_2O

3) Fugitive / Leakage Emission


CO_2, HFCs, PFCs, NF_3, SF_6

Scope2: Energy Indirect GHG Emissions





Scope3: Other Indirect GHG Emissions

Upstream or downstream	Scope 3 category
Upstream scope 3 emissions	1. Purchased goods and services 2. Capital goods 3. Fuel- and energy-related activities (not included in scope 1 or scope 2) 4. Upstream transportation and distribution 5. Waste generated in operations 6. Business travel 7. Employee commuting 8. Upstream leased assets
Downstream scope 3 emissions	9. Downstream transportation and distribution 10. Processing of sold products 11. Use of sold products 12. End-of-life treatment of sold products 13. Downstream leased assets 14. Franchises 15. Investments

Step 4: Calculation

Data collection period ; 1 year




CO_2

CH_4

N_2O


g ?

kg ?

Modeling

Emission (CO_2eq) = Activity Data (AD) ✕Emission Factor (EF)

Step 4: Calculation (Cont.)

Emission (CO_2eq) = Activity Data (AD) ✕Emission Factor (EF)

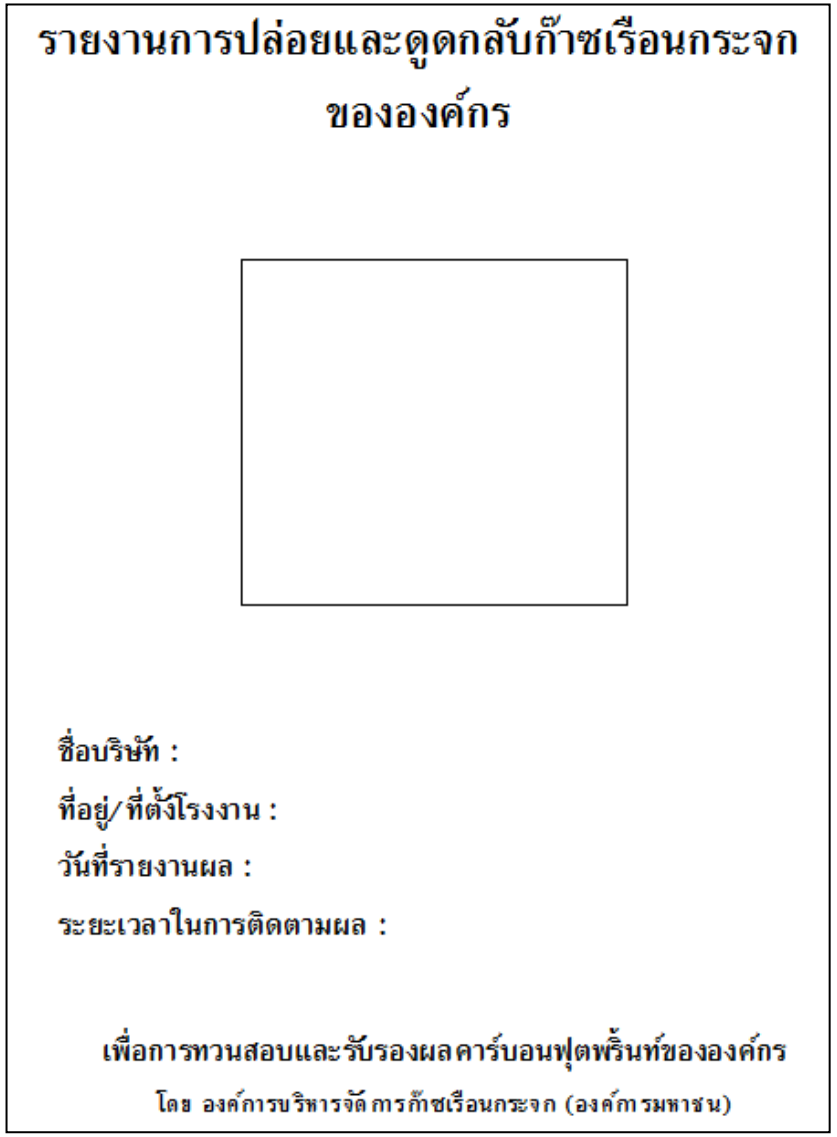
Activity Data (AD)

- Lignite = 50,000 kg/year

Fuel	Emission Factor		
	CO_2	CH_4	N_2O
Lignite	1.06 ($kg/kg_{lignite}$)	0.000015 ($kg/kg_{lignite}$)	0.000016 ($kg/kg_{lignite}$)

Fuel	Activity Data	GHG (kg/year)		GHG ($kgCO_2e$/year)	Total ($kgCO_2e$/year)
Lignite	50,000 kg/year	CO_2	50,000 X 1.06 = 53,000	53,000 X 1 = 53,000	53,233
		CH_4	50,000 X 0.000015 = 0.75	0.75 X 28 = 21	
		N_2O	50,000 X 0.000016 = 0.8	0.8 X 265 = 212	

Step 5: Documentation



รายงานการปล่อยและดูดกลับก๊าซเรือนกระจกขององค์กร

ชื่อบริษัท :

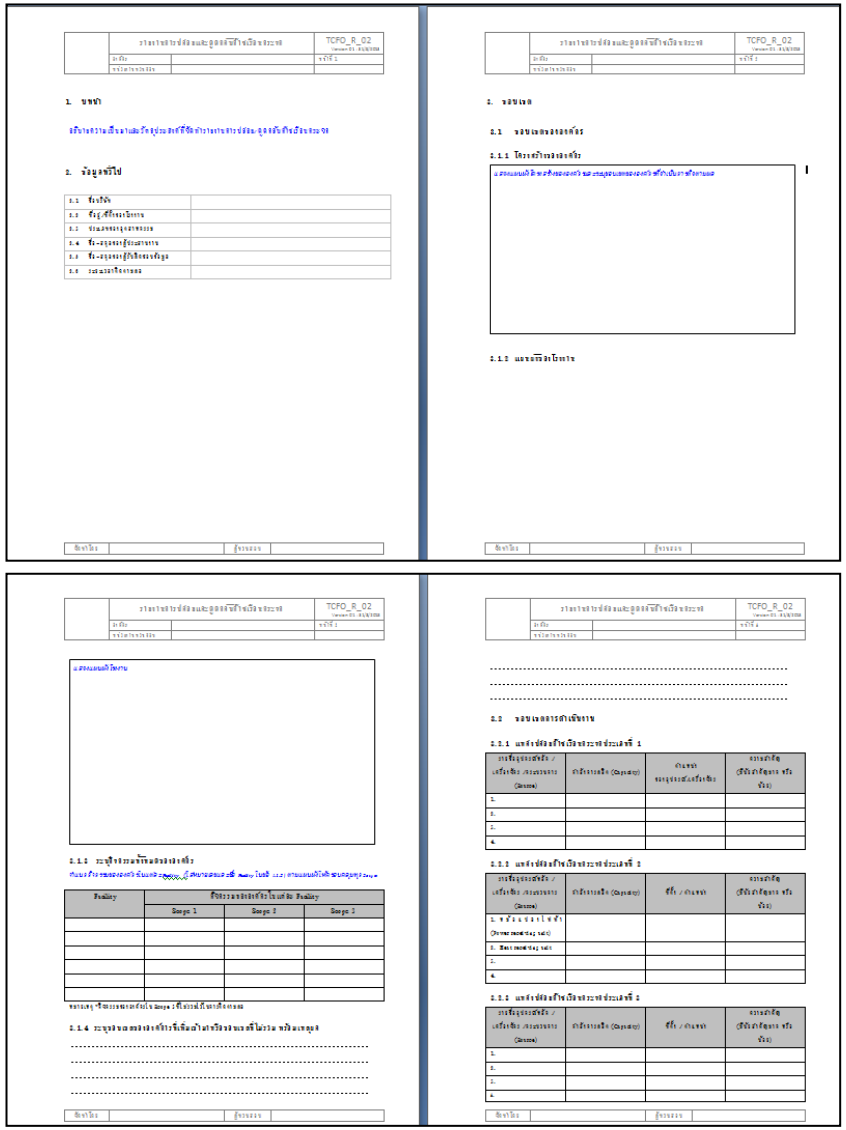
ที่อยู่/ที่ตั้งโรงงาน :

วันที่รายงานผล :

ระยะเวลาในการติดตามผล :

เพื่อการทวนสอบและรับรองผลคาร์บอนฟุตพริ้นท์ขององค์กร

โดย องค์การบริหารจัดการก๊าซเรือนกระจก (องค์การมหาชน)



TCFO_R_02

Source: http://thaicarbonlabel.tgo.or.th/tools/files.php?mod=YjNKbllXNXBlbUYwYVc5dVgyUnZkMjVzYjJGaw&type=WDBaSlRFVlQ&files=TWprPQ

Step 5: Documentation (Cont.)

TCFO_R_01

Excel Sheet GHG

รายละเอียดขององค์กร				TCFO_R_01 Version 04 : 21/2/2020	
ชื่อฟอร์ม	บัญชีรายการก๊าซเรือนกระจก	องค์กร	ชื่อองค์กรที่ขอขึ้นทะเบียน	หน้าที่	1
รหัสฟอร์ม	Fr-01	ผู้จัดทำ		วันที่จัดทำ	

ชื่อองค์กรที่ขอขึ้นทะเบียน

บัญชีรายการก๊าซเรือนกระจกฉบับนี้สามารถใช้ได้ตั้งแต่บัดนี้เป็นต้นไป และเริ่มบังคับใช้ 1 ตุลาคม 2563

รูปขององค์กร

ขอบเขตขององค์กร	
ประเภท 1	
ประเภท 2	
ประเภท 3	
ระยะเวลาเก็บข้อมูล	(ปีฐาน)
ข้อมูลองค์กร	
1	
2	
3	
4	
5	
สถานที่ติดต่อ	
วันที่ขอขึ้นทะเบียน	

ชื่อฟอร์ม	บัญชีรายการก๊าซเรือนกระจก	
รหัสฟอร์ม	Fr-04	

ขอบเขต	รายการ	ค่า LCI		ค่า E		
		หน่วย	ปริมาณ	CO_2	CH_4	N_2O
ขอบเขต 1						

Source: http://thaicarbonlabel.tgo.or.th/tools/files.php?mod=YjNKbllXNXBlbUYwYVc5dVgyUnZkMjVzYjJGaw&type=WDBaSlRFVlQ&files=TWpnPQ

Step 5: Documentation (Cont.)

File Presentation

TCFO_P_01

Source: http://thaicarbonlabel.tgo.or.th/tools/files.php?mod=YjNKbllXNXBlbUYwYVc5dVgyUnZkMjVzYjJGaw&type=WDBaSlRFVlQ&files=TWpjPQ

Step 6: Verification

- ✓ Relevance
- ✓ Completeness
- ✓ Consistency
- ✓ Accuracy
- ✓ Transparency

Uncertainty

Verification

Verification report

thaicarbonfootprint@gmail.com

Step 6: Verification

- The third-party verification is for organizations that wish to get the Carbon Footprint for Organization certificate by TGO.
- Third-party verifier shall be registered with TGO.

1 October 2021, Verification Bodies must be accreditation by National Standardization Council of Thailand (NSC)

"On process"

Source: http://thaicarbonlabel.tgo.or.th/index.php?lang=EN&mod=ZG1WeWFXWnBaWEk9&action=YjNKbllXNXBlbUYwYVc5dQ

Step 7: Registration

Approved by Board of Directors

Thailand Greenhouse Gas Management Organization (Public Organization)

Registration fee 8,500 baht/organization

Step 7: Registration (Cont.)

The company quantify its CFO

↓

The company prepare Report and supporting documents as TGO required

↓

The company proceed agreement & contract with registered Verification body

→

- Verification process
- Pre verification :Desk/strategic review
- On site verification
- Summarized and monitoring

↓

The company send an application and fee to TGO

↓

Verification body send Verification report to TGO

↓

TGO as a secretariat review the submitted evident and proposed to the Board of Directors Thailand Greenhouse Gas Management Organization (Public Organization) for approved and endorse the certificate

↓

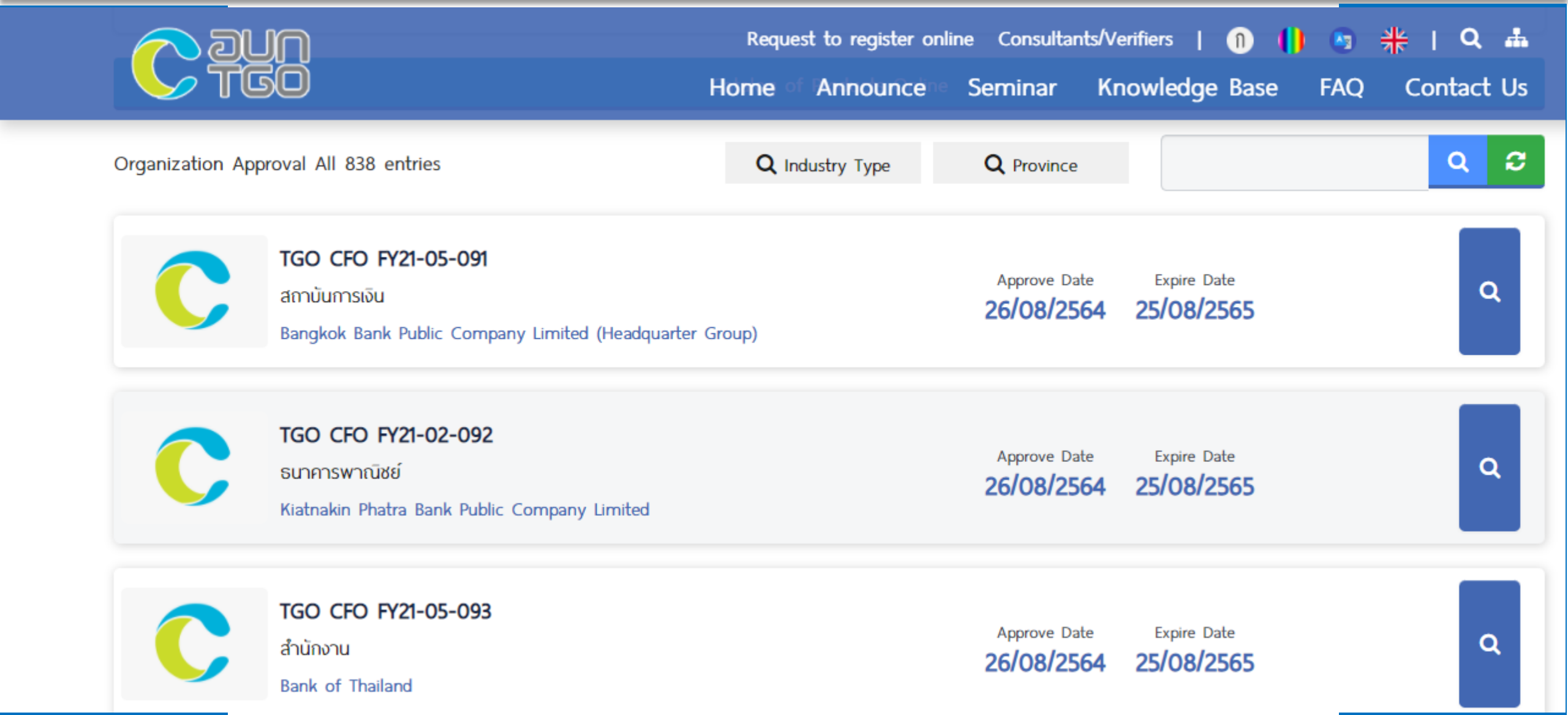
TGO's Board of Directors approve the GHG report

→ no → Inform the company

yes ↓

TGO certify GHG assertion and inform the company

Public disclosure



Source: http://thaicarbonlabel.tgo.or.th/index.php?lang=EN&mod=YjNKbllXNXBlbUYwYVc5dVgyRndjSEp2ZG1Gcw

Information Linkage

ISO 26000 SOCIAL RESPONSIBILITY

GRI

SET

Dow Jones Sustainability Indices
In Collaboration with RobecoSAM

CDP
DRIVING SUSTAINABLE ECONOMIES

กลต

Website Carbon Label Project

http://thaicarbonlabel.tgo.or.th/

องค์การบริหารจัดการก๊าซเรือนกระจก (องค์การมหาชน)

Thai Carbon Footprint

Facebook Carbon Label Project

Thailand Greenhouse Gas Management Organization (Public Organization)

120 Ratthaprasasanabhakti Building,

9th Fl. The Government Complex Commemorating His Majesty, Chaeng Wattana Road Laksi, Bangkok 10210 Thailand

Tel. 02 141 9790 Fax 02 143 8403 www.tgo.or.th http://thaicarbonlabel.tgo.or.th/ thada@tgo.or.th

Thailand Greenhouse Gas Management Organization (Public Organization): TGO

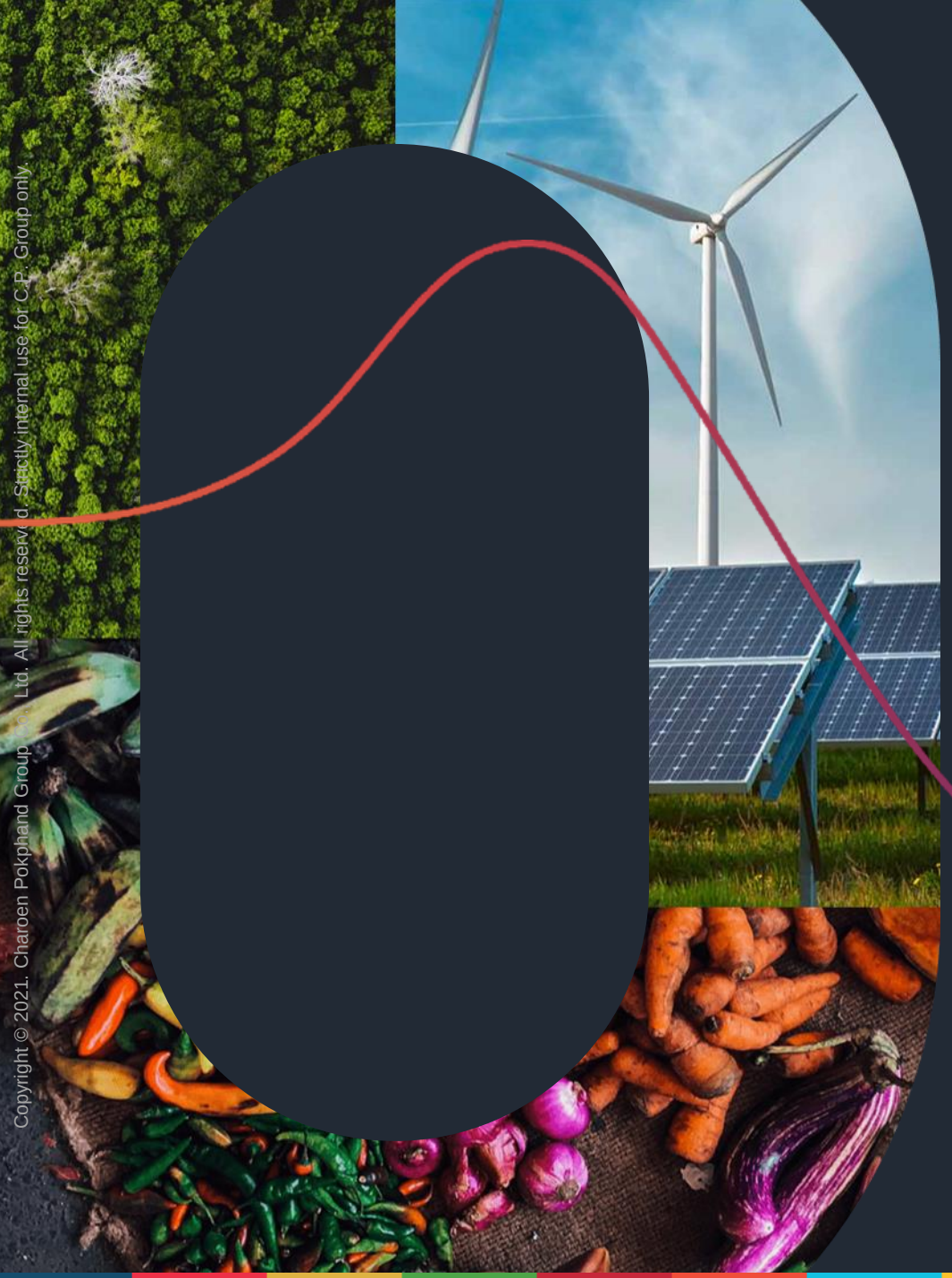
READY THAILAND TO COMBAT CLIMATE CHANGE

Charoen Pokphand Group's approach to Greenhouse Gas accounting

Mr. Somjettana Pasakanon

Director, Sustainability Development,
Good Governance & Corp. Comm. Office

Charoen Pokphand Group



C.P. Groups Insights & Experience with GHG Emissions Accounting

TCFD & SDGs Workshop: ESG Risk Analysis & GHG Accounting

Somjettana Pasakanon
Director, Sustainability Development
Sustainability, Good Governance and Corporate Communications Office, C.P. Group

19 October 2021

C.P. Group At A Glance

Agro-Industry and Food

C.P. GROUP · CPF · 正大集团 CP GROUP

Feed Ingredients Trading

Feed Ingredients Trading Business Group

International Trading

CPI TRADING

Crop Integration

CPP · CP CROP

Seed, Fertilizers & Plant Protection

CHIA TAI

Pet Food

PCG

Retail & Distribution

CPALL · makro · LOTUS · Lotus's

Telecommunications

true

E-Commerce & Digital

ascend

Property Development

CP LAND SMART PROPERTY SOLUTIONS · SUPER BRAND MALL

Automotive

Packaging

CPPC

Pharmaceuticals

中國生物制藥有限公司 SINO BIOPHARMACEUTICAL LIMITED

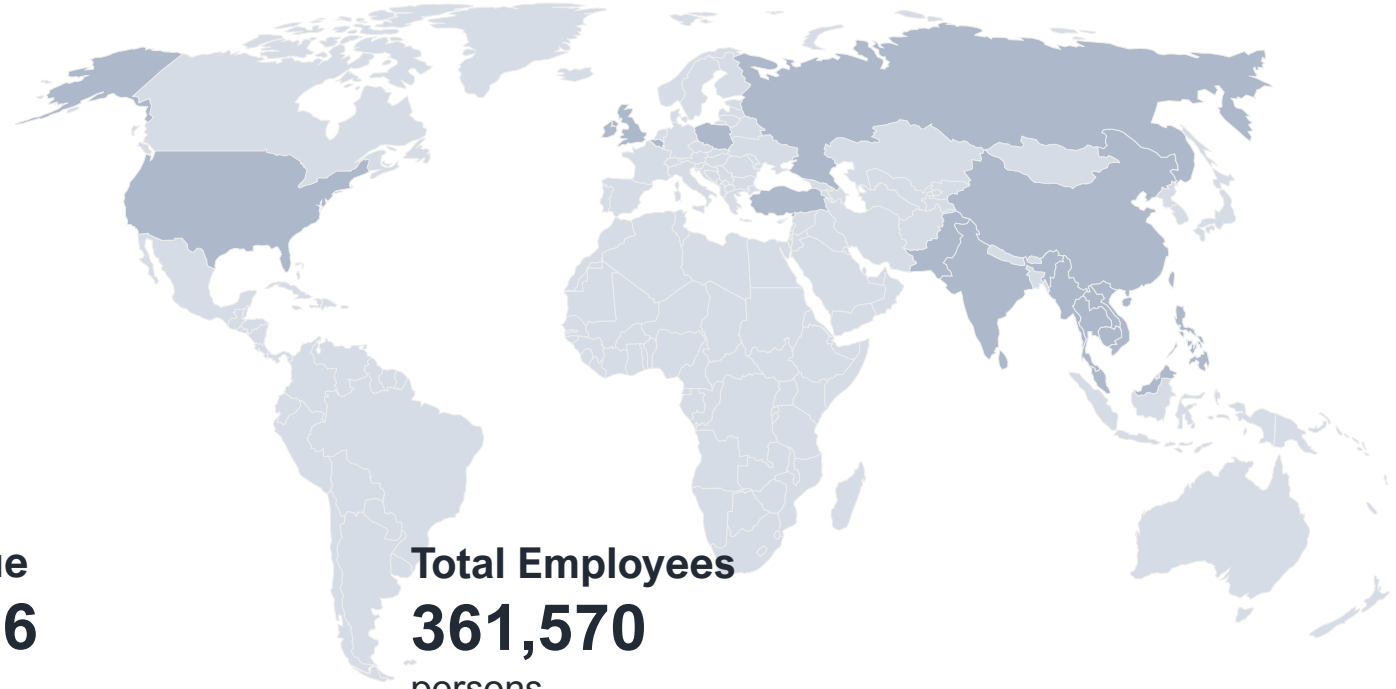
Finance & Banking

正信銀行有限公司 ZHENG XIN BANK COMPANY LIMITED

C.P. GROUP

C.P. LEADERSHIP INSTITUTE · Thana Telecom · ALTERVIM Power for Tomorrow

Our Global Footprint



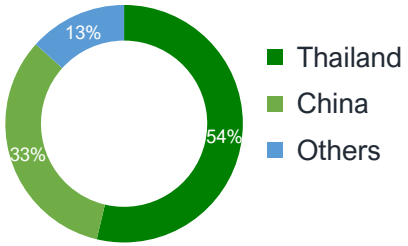
BUSINESS LINE
AGRO-INDUSTRY & FOOD
RETAIL & DISTRIBUTION
MEDIA & TELECOMMUNICATIONS
E-COMMERCE & DIGITAL
PROPERTY DEVELOPMENT
AUTOMOTIVE & INDUSTRIAL PRODUCTS
PHARMACEUTICALS
FINANCE & INVESTMENT

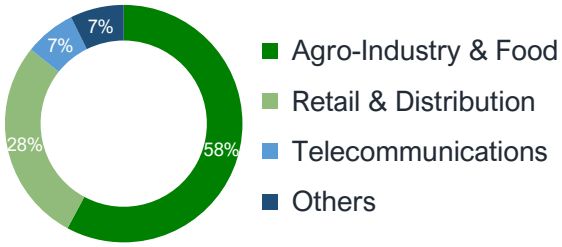
	COUNTRY	OPERATION
	THAILAND	● ● ● ● ● ●
	CHINA	● ● ● ● ● ●
SOUTHEAST ASIA	CAMBODIA	● ● ●
SOUTHEAST ASIA	INDONESIA	●
SOUTHEAST ASIA	LAOS	●
SOUTHEAST ASIA	MALAYSIA	●
SOUTHEAST ASIA	MYANMAR	● ● ● ●
SOUTHEAST ASIA	PHILIPPINES	● ●
SOUTHEAST ASIA	SINGAPORE	●
SOUTHEAST ASIA	VIETNAM	● ● ●
SOUTH ASIA	BANGLADESH	●
SOUTH ASIA	INDIA	● ●
SOUTH ASIA	PAKISTAN	●
SOUTH ASIA	TURKEY	●
SOUTH ASIA	SRI LANKA	●
EUROPE & USA	BELGIUM	●
EUROPE & USA	POLAND	●
EUROPE & USA	RUSSIA	●
EUROPE & USA	UNITED KINGDOM	●
EUROPE & USA	UNITED STATES	●

Total Revenue

2,144,266

million THB

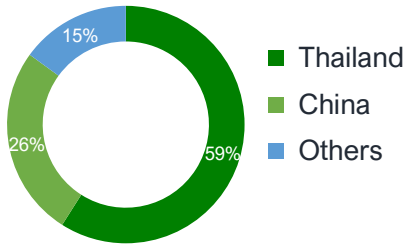


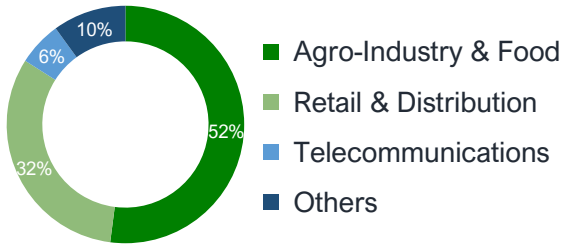


Total Employees

361,570

persons





CPG 2030 Sustainability Framework

To be a leading tech and innovative conglomerate, providing food for body and mind that creates shared value and brings health and well-being for all

Three-Benefit Principle

Sufficiency Economy Philosophy	C.P. Excellence Management Approach	The 10 UNGC Principles 17 UN SDGs & UNGP	Regulations and Standards

Heart: Living Right	Health: Living Well	Home: Living Together
CORPORATE GOVERNANCE	HEALTH & WELL-BEING	CLIMATE RESILIENCE
HUMAN RIGHTS & LABOR PRACTICES	SOCIAL IMPACT & ECONOMIC CONTRIBUTION	CIRCULAR ECONOMY
EDUCATION & INEQUALITY REDUCTION	FOOD SECURITY & ACCESS TO NUTRITION	WATER STEWARDSHIP
LEADERSHIP & HUMAN CAPITAL DEVELOPMENT	INNOVATION	ECOSYSTEM & BIODIVERSITY PROTECTION
CYBER SECURITY & DATA PROTECTION	STAKEHOLDER ENGAGEMENT	RESPONSIBLE SUPPLY CHAIN MANAGEMENT

Enabled by Partnerships, Capability, and Culture of Sustainability

Collaboration on Climate Change & Sustainable Development

RACE TO ZERO

BUSINESS AMBITION FOR 1.5°C

UN GLOBAL COMPACT CLIMATE AMBITION ACCELERATOR

Caring for Climate

THE GLOBAL COMPACT UNEP

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

CDP
DISCLOSURE INSIGHT ACTION

UN GLOBAL COMPACT

- Decent Work in Global Supply Chain

wbcsd

FReSH

- Future of Work

WORLD ECONOMIC FORUM

YOUNG WORLD one

หอการค้าไทย
THE THAI CHAMBER OF COMMERCE
สภาหอการค้าแห่งประเทศไทย
BOARD OF TRADE OF THAILAND

carbon neutral network

CARBON Markets Club

Climate Resilience Management Framework

1 LEADERSHIP COMMITMENT

- C.P. Group Sustainability Strategy and 2030 Goals
- The Ten Principles of the UN Global Compact and Caring for Climate Initiative
- Business Ambition to 1.5°C

RACE TO ZERO | BUSINESS AMBITION FOR 1.5°C | OUR ONLY FUTURE

2 ASSESS

- *Transition Risks:* Policy & Legal, Technology, Market, Reputation
- *Physical Risks:* Acute, Chronic
- *Opportunities:* Resource Efficiency, Energy Source, Products/Services, Markets

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

3 DEFINE

- Net Zero 2030 (Scope 1+2 Emissions)
- Science Based Targets
- Zero Food Waste & Zero Waste-to-Landfill 2030
- Planting 20 million trees by 2025

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

4 IMPLEMENT

- Energy Efficiency
- Renewable Energy
- Waste Management
- Electric Vehicle
- Climate Smart Agriculture
- Forestation, Agroforestry, Tree Planting
- Low-Carbon Product & Services

5 MEASURE

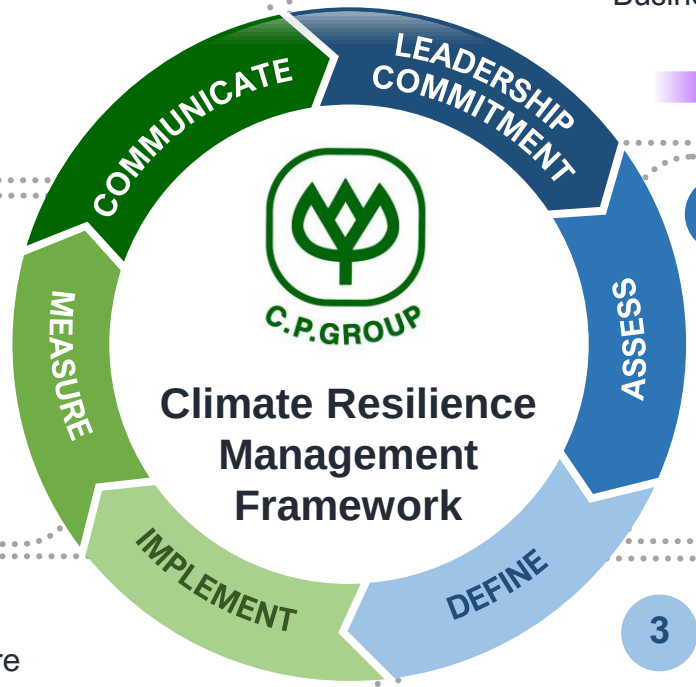
- GHG Accounting (Scope 1, 2, 3)
- 3rd Party Verification
- Monitor Performance vs. Targets

GREENHOUSE GAS PROTOCOL | Food Loss + Waste PROTOCOL

6 COMMUNICATE

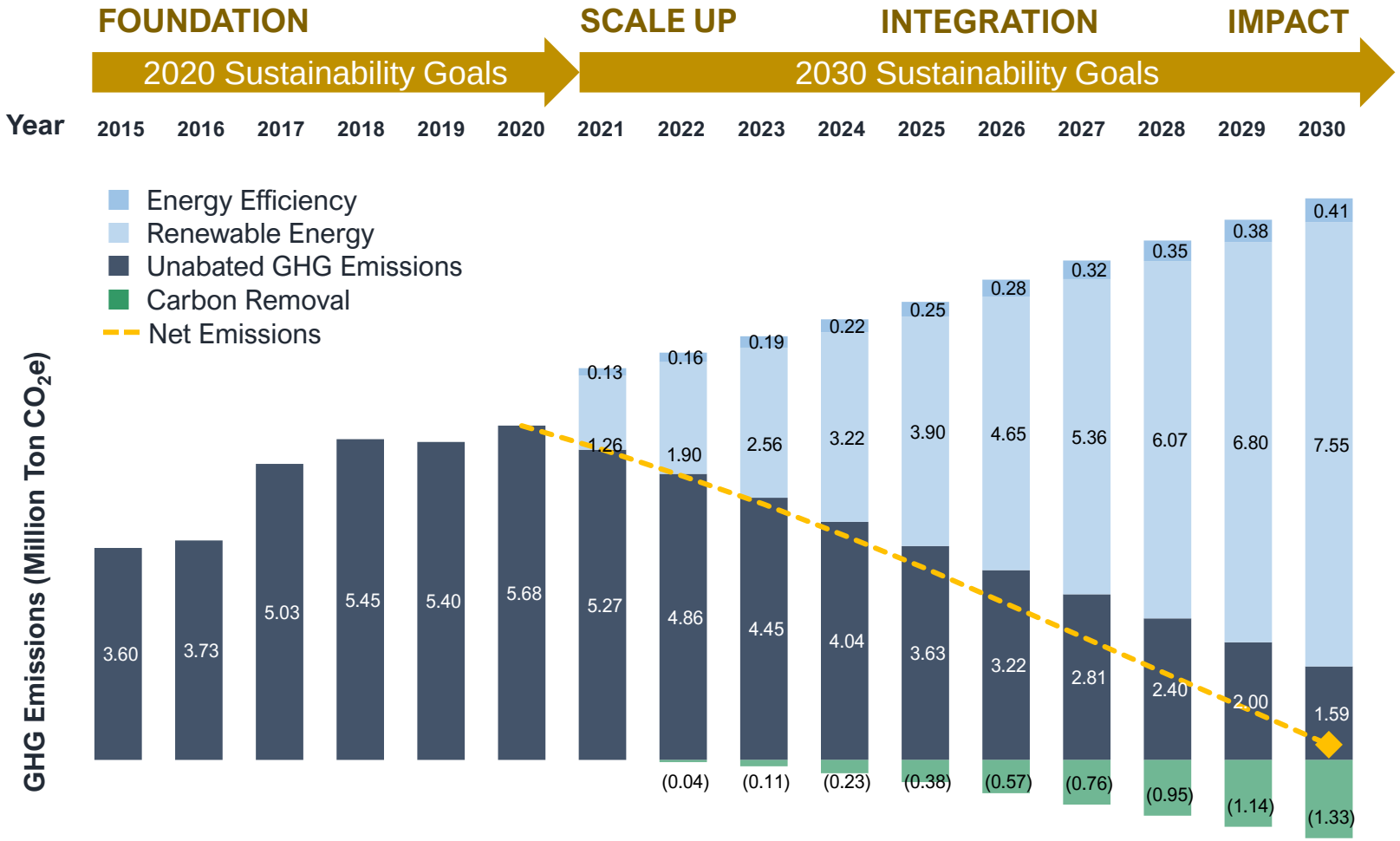
- C.P. Group Sustainability Report and UN Global Compact Communication on Progress
- CDP Climate
- Partnerships

United Nations Global Compact | Caring for Climate | UNEP | CDP DRIVING SUSTAINABLE ECONOMIES



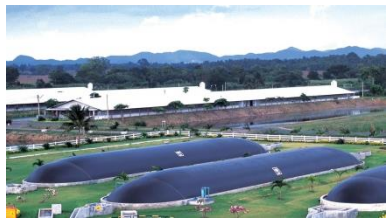
C.P. Group commits to reach Net Zero (Scope 1&2) by 2030

RACE TO ZERO | BUSINESS AMBITION FOR 1.5°C | OUR ONLY FUTURE



ENERGY EFFICIECNY
- Cogeneration System
- High Efficiency Chiller
- Waste Heat Recovery
- High Efficiency Lighting

RENEWABLE ENERGY
- Solar Energy
- Wind Energy
- Biomass Energy
- Biodiesel, Biomethane



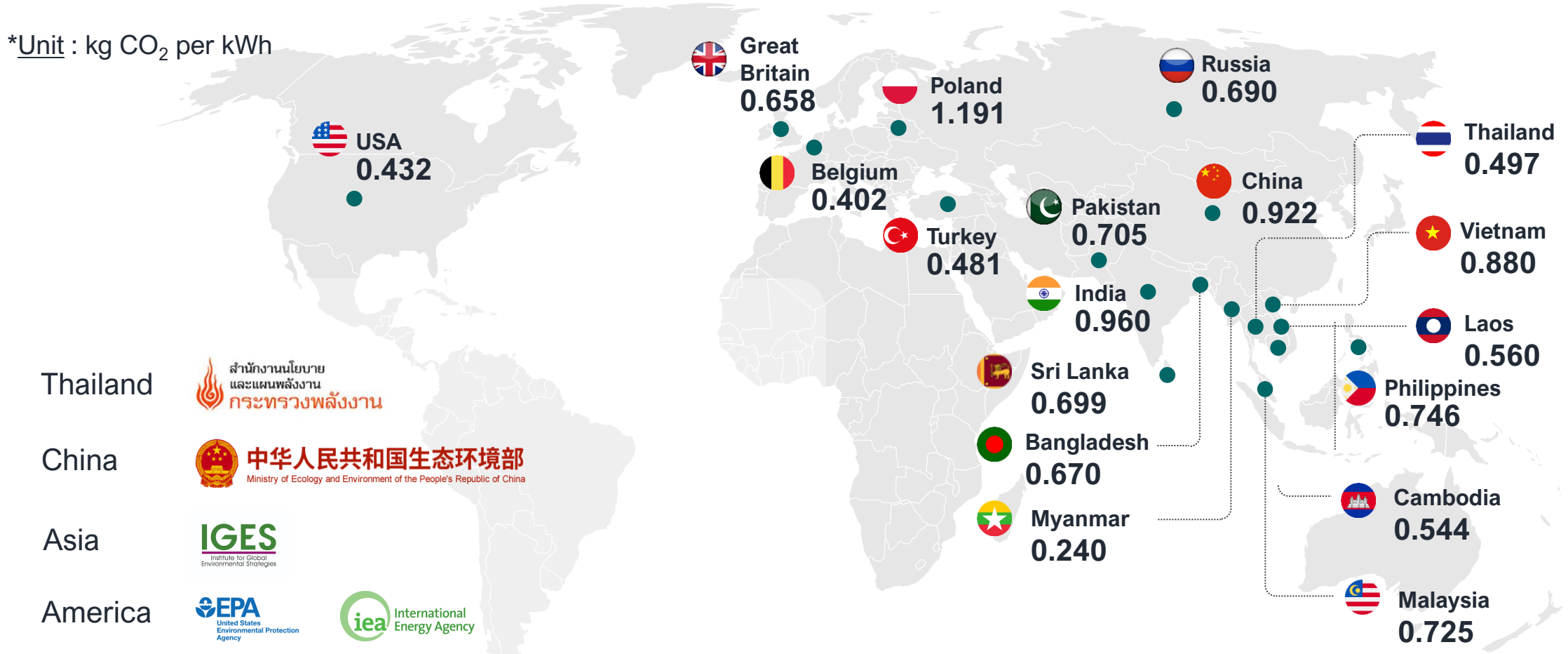
WASTE MANAGEMENT
- GHG Capture and Utilization
- Production of Compost from Organic Waste
- Recycling

FORESTATION
- Sustainable Forestation
- Agroforestry
- REDD+

Grid Emission Factors

Source by Country

*Unit : kg CO_2 per kWh



Thailand — สำนักงานนโยบายและแผนพลังงาน กระทรวงพลังงาน

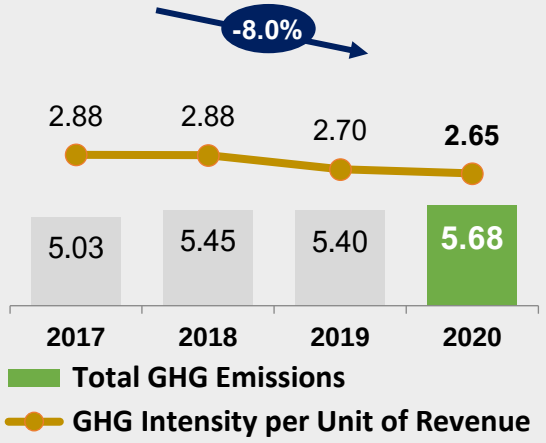
China — 中华人民共和国生态环境部 Ministry of Ecology and Environment of the People's Republic of China

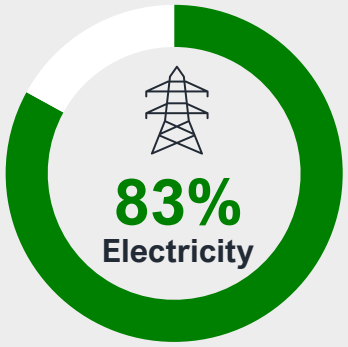
Asia — IGES Institute for Global Environmental Strategies

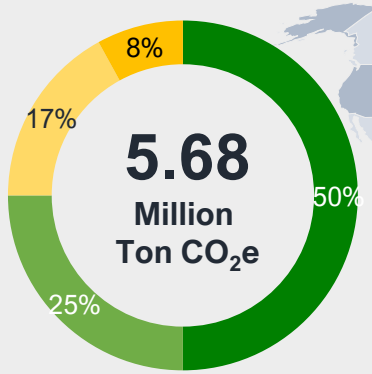
America — EPA United States Environmental Protection Agency; iea International Energy Agency

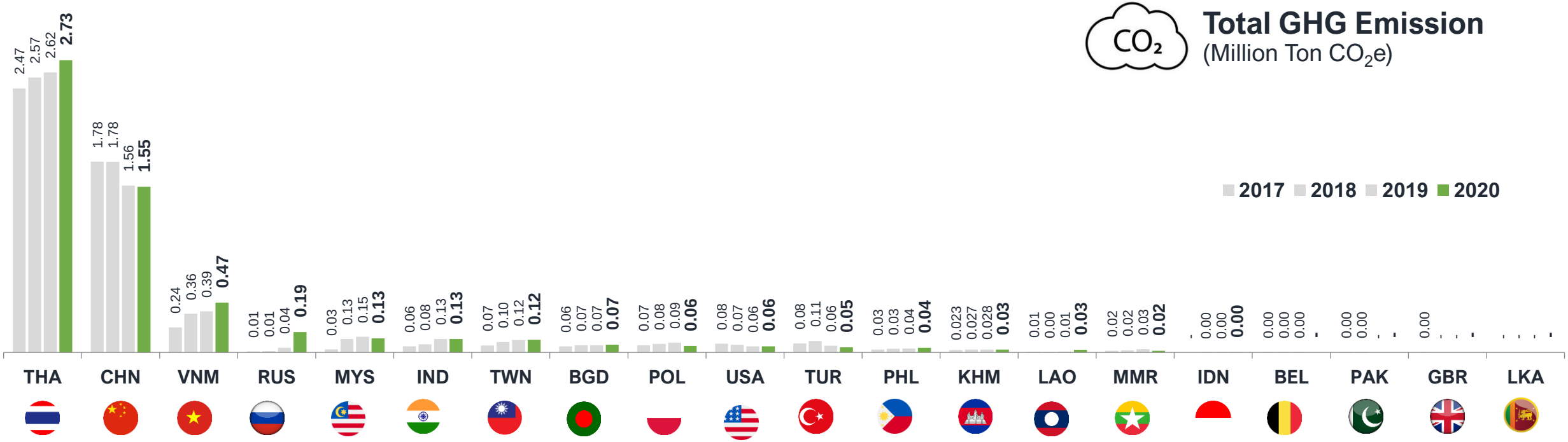
Europe — Department for Environment Food & Rural Affairs; Covenant of Mayors for Climate & Energy EUROPE

GHG Emission by Country

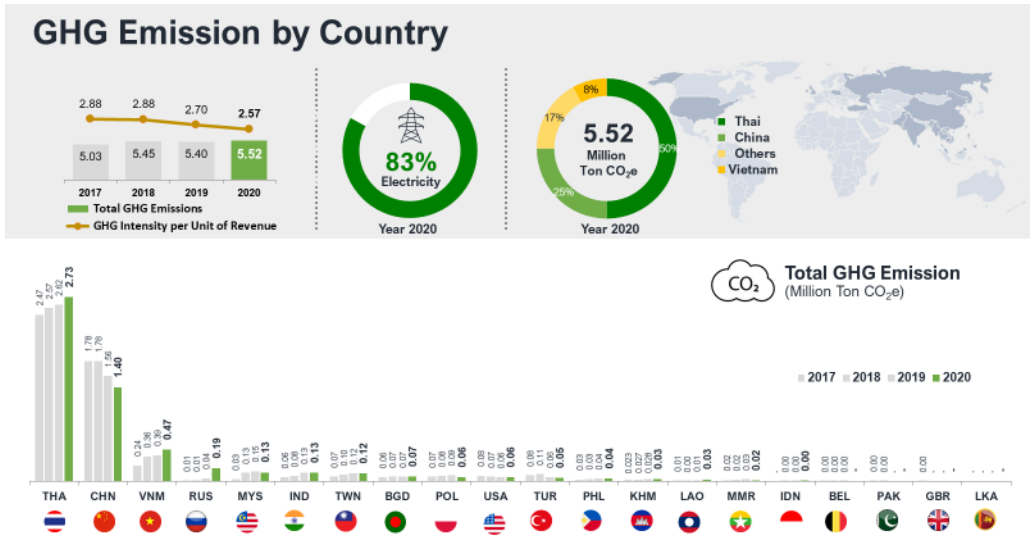


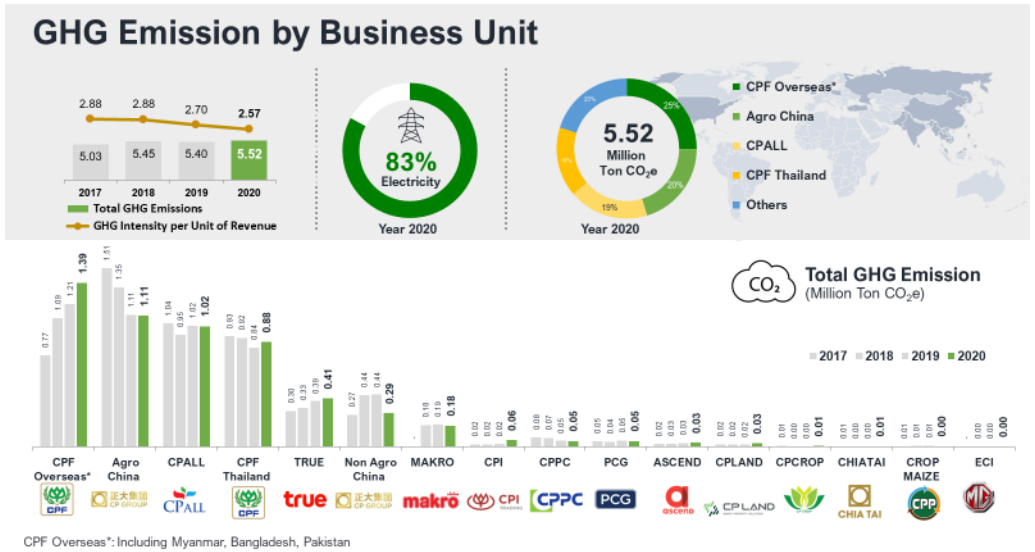




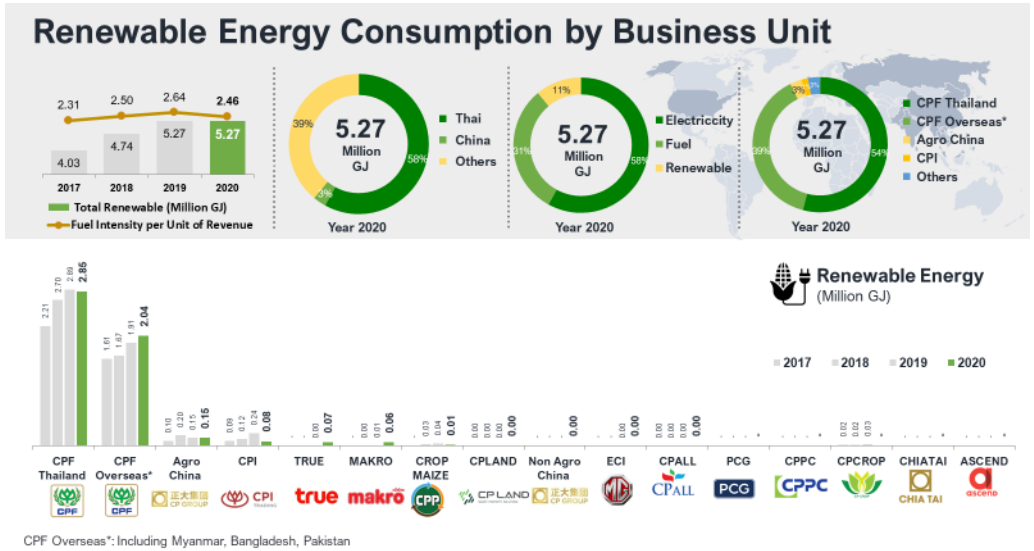


Climate Change Management Dashboard

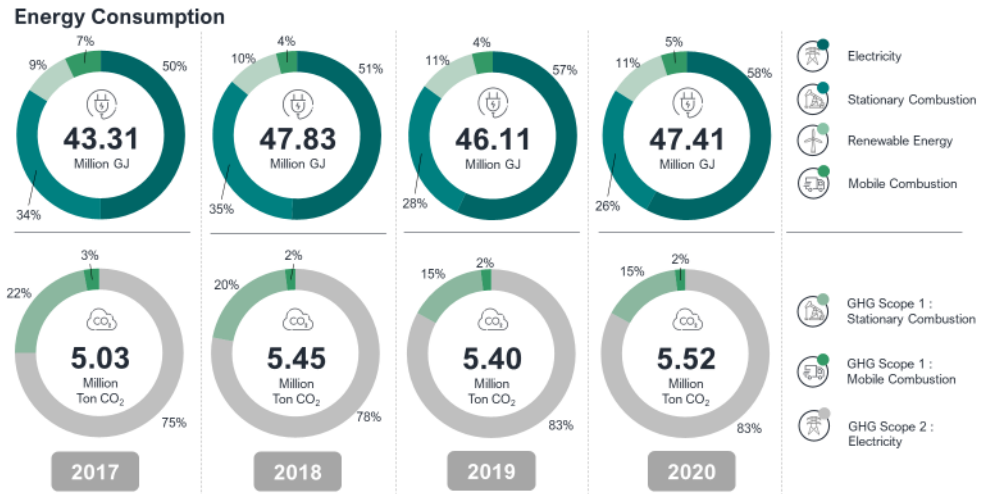




CPF Overseas*: Including Myanmar, Bangladesh, Pakistan

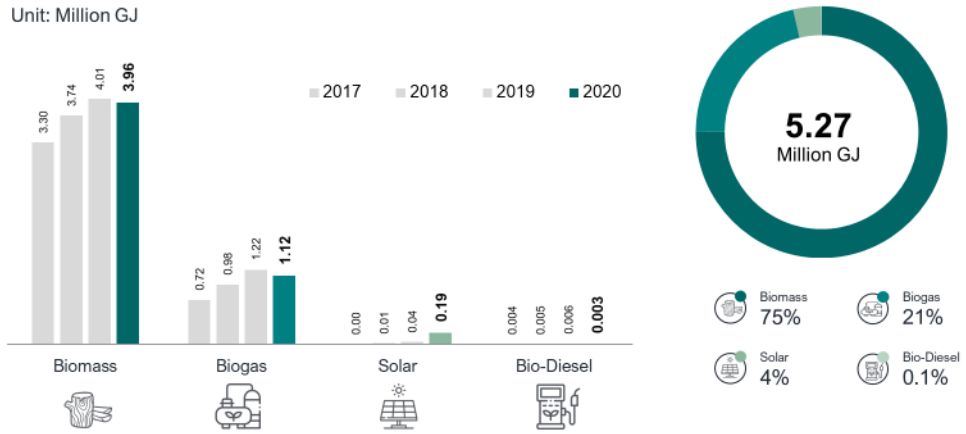


CPF Overseas*: Including Myanmar, Bangladesh, Pakistan

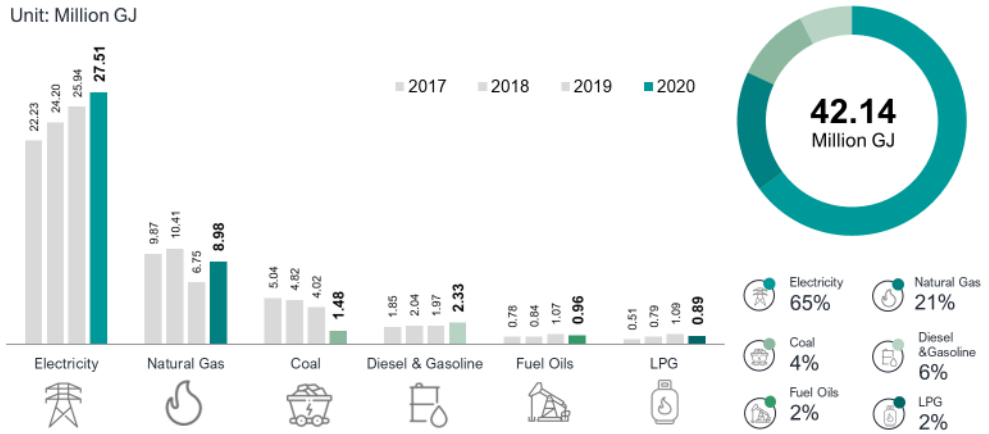


Climate Change Management Dashboard

Renewable Energy Consumption by Type



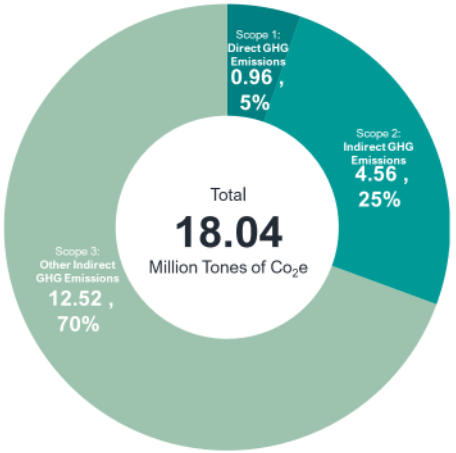
Fossil Fuel Consumption by Type



GHG Emissions Scope 1, 2 and 3 (FY2020)

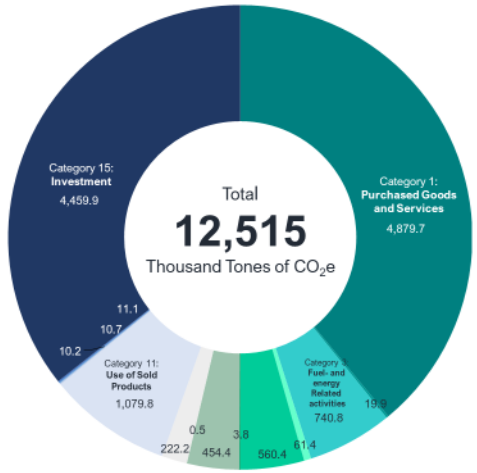
*Units : Million Tones of CO_2e

Scope 1: **Direct GHG emissions** • stationary combustion (e.g. fuels, heating sources) • mobile combustion (e.g. car, vans, trucks)	0.96	5%	
Scope 2: **Indirect GHG emissions** • The generation of purchased energy (e.g. purchased electricity, steam, heat and cooling.)	4.56	25%	
Scope 3: **Other Indirect GHG emissions** • From activities of the organization, occurring from sources that they do not own or control.	12.52	70%	

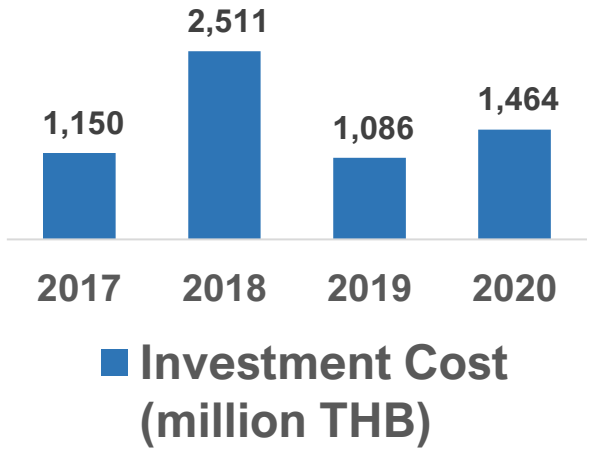


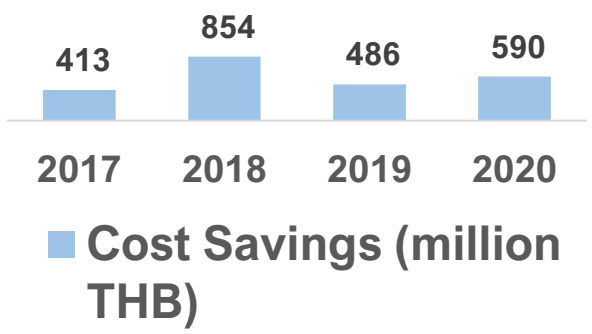
GHG Scope 3 Emissions

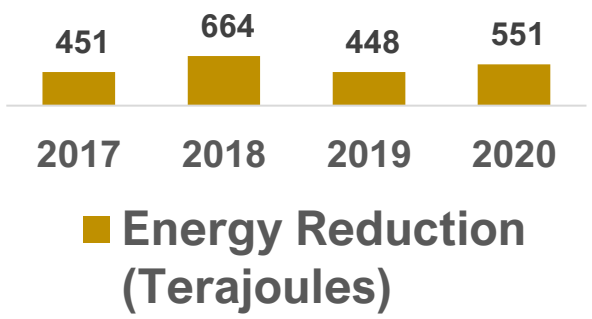
Category 1: Purchased Goods and Services	4,879.7	42.5%	R, CL
Category 2: Capital Goods	20.0	0.2%	NR, CL
Category 3: Fuel- and energy related activities	740.8	6.5%	R, CL
Category 4: Upstream Transportation and Distribution	61.4	0.5%	R, CL
Category 5: Waste Generated in Operations	560.4	4.9%	R, CL
Category 6: Business Travel	3.8	0.01%	NR, CL
Category 7: Employee Commuting	454.4	4.0%	NR, CL
Category 8: Upstream Leased Assets	0.5	0.01%	NR, CL
Category 9: Downstream Transportation and Distribution	-	-	R, CL
Category 10: Processing of Sold Products	222.2	1.9%	NR, CL
Category 11: Use of Sold Products	1,097.8	0.4%	R, CL
Category 12: End-of-Life Treatment of Sold Products	1.7	0.01%	R, CL
Category 13: Downstream Leased Assets	10.2	0.1%	NR, CL
Category 14: Franchises	11.1	0.1%	NR, CL
Category 15: Investment	4,466.4	38.9%	NR, CL

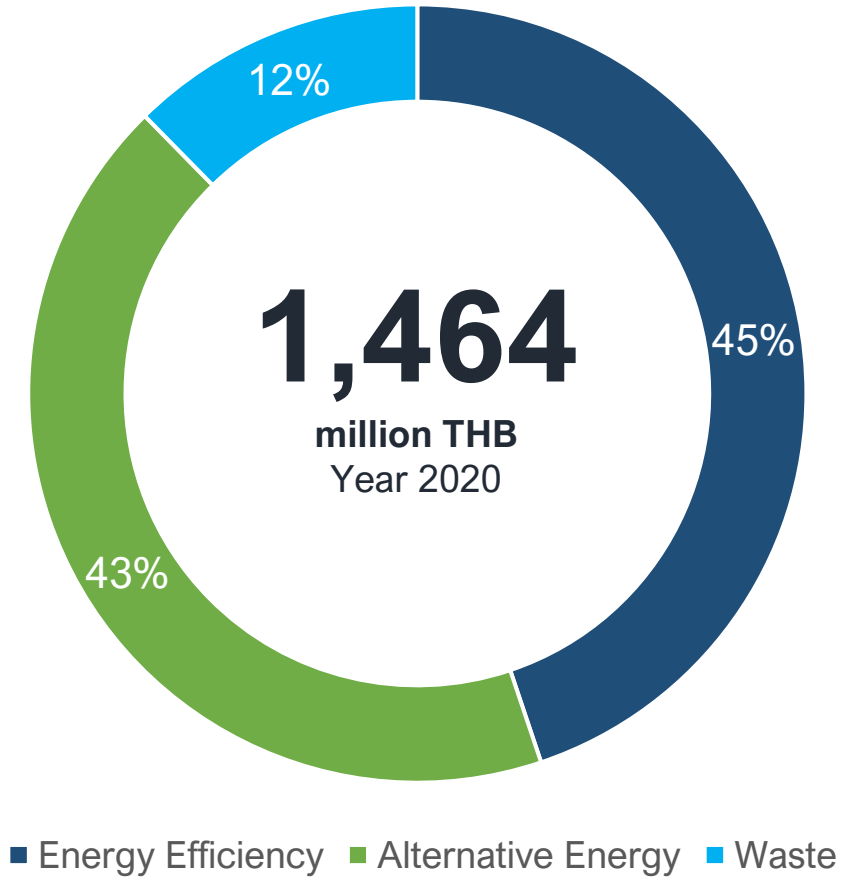


Climate-related Investment





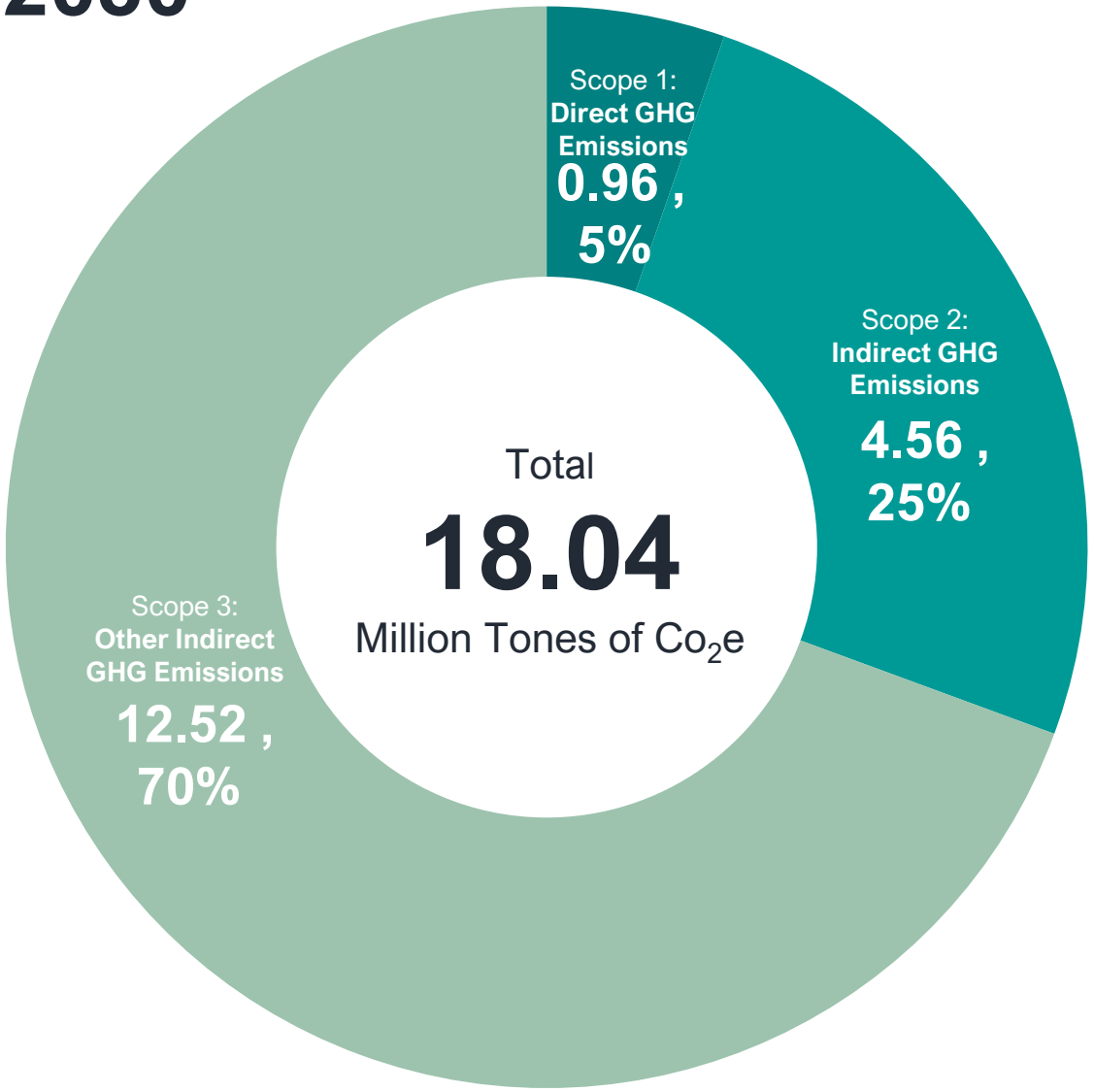




We commit to set a long-term target to reach Net Zero value chain emissions by no later than 2050

*Units : Million Tones of CO_2e

Scope 1: **Direct GHG emissions** • stationary combustion (e.g. fuels, heating sources) • mobile combustion (e.g. car, vans, trucks)	0.96	**5%**
Scope 2: **Indirect GHG emissions** • The generation of purchased energy (e.g. purchased electricity, steam, heat and cooling.)	4.56	**25%**
Scope 3: **Other Indirect GHG emissions** • From activities of the organization, occurring from sources that they do not own or control.	12.52	**70%**



C.P. Group Scope 3 GHG Emissions Breakdown

Category 1: **Purchased Goods and Services**	4,879.7	42.5%	R, CL
Category 2: **Capital Goods**	20.0	0.2%	NR, CL
Category 3: **Fuel- and energy related activities**	740.8	6.5%	R, CL
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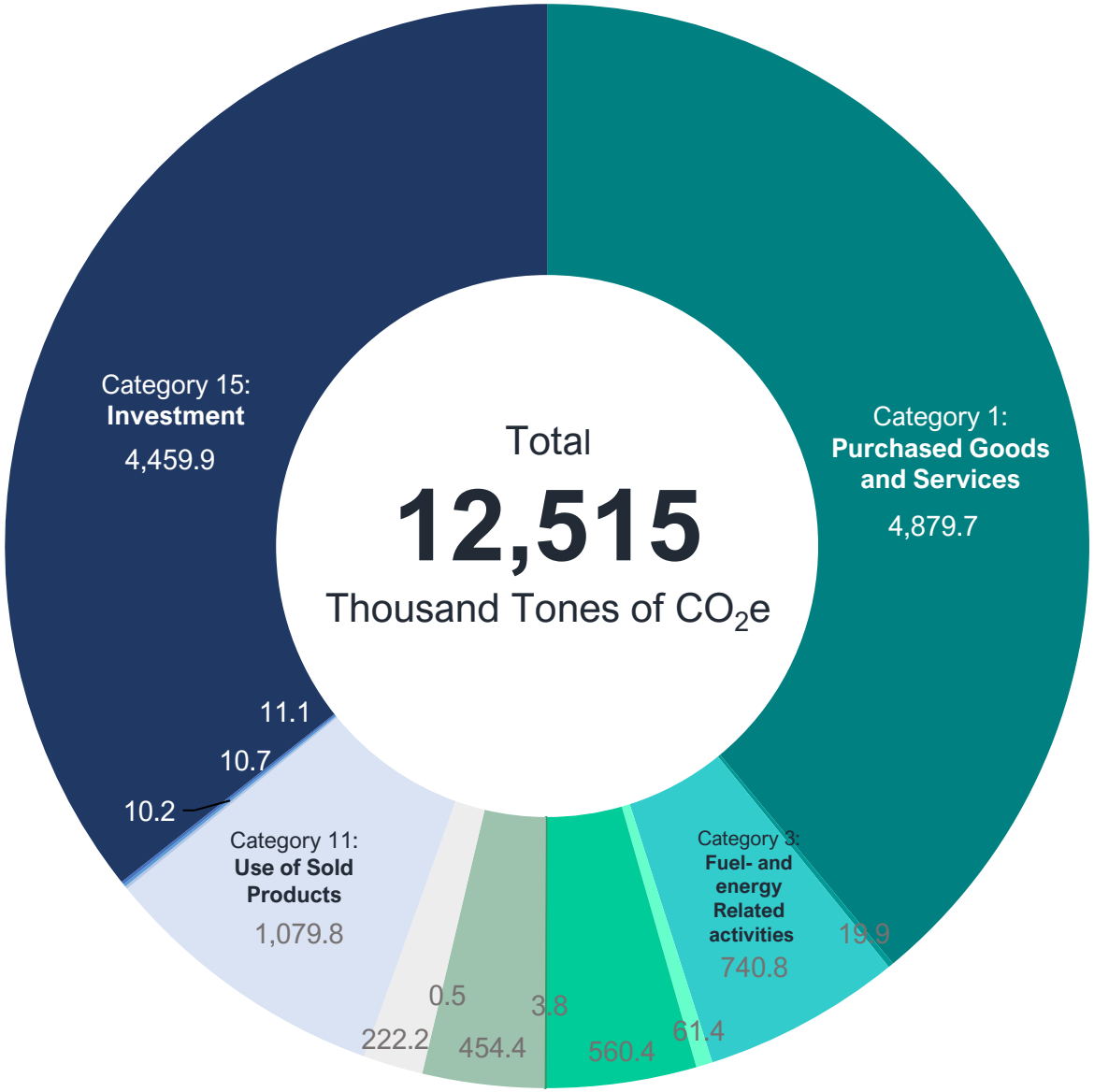
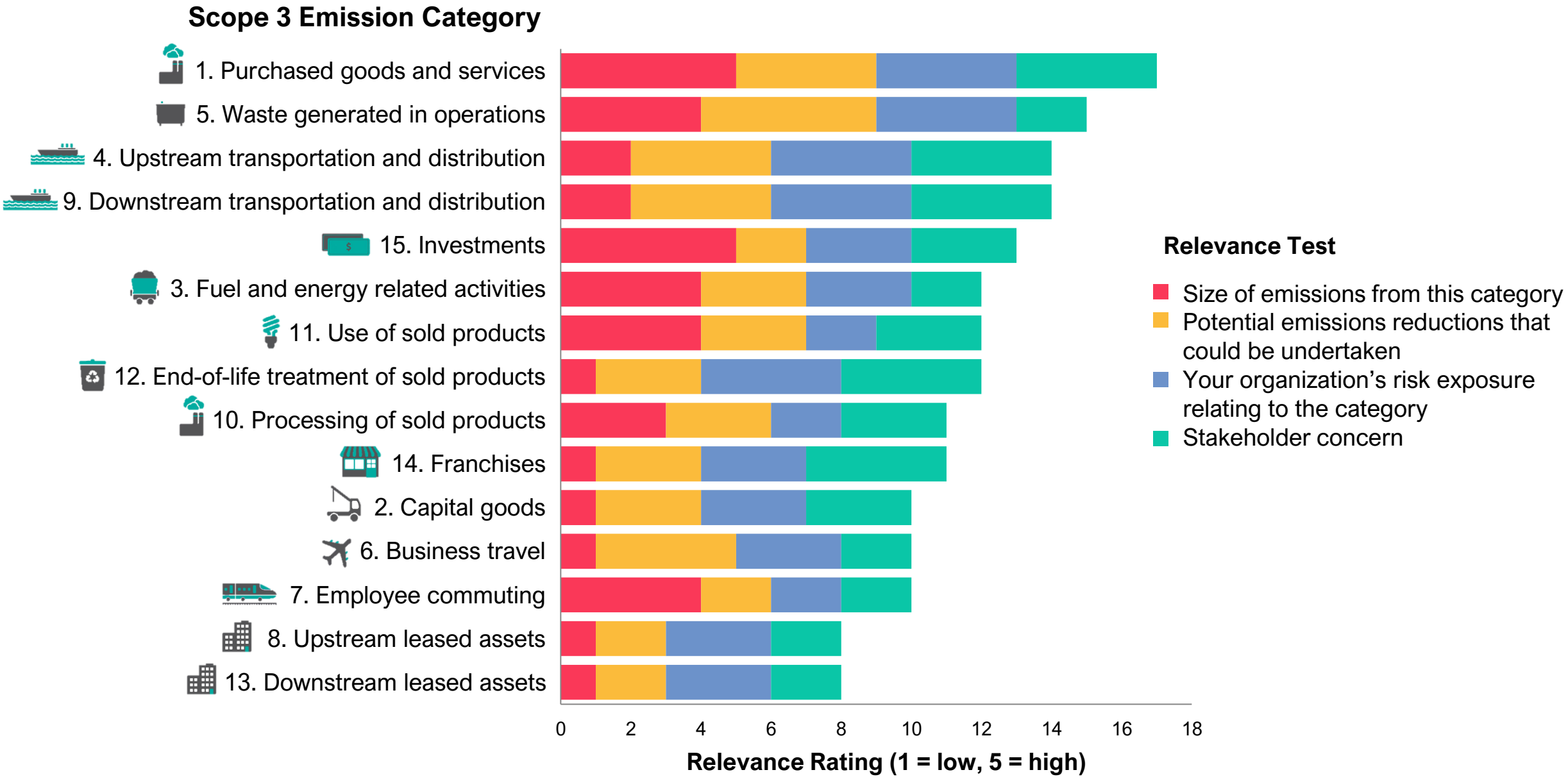
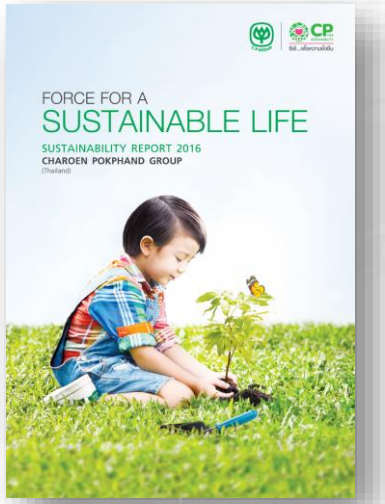
Category 7: **Employee Commuting**	454.4	4.0%	NR, CL
Category 8: **Upstream Leased Assets**	0.5	0.01%	NR, CL
Category 9: **Downstream Transportation and Distribution**	-	-	R, CL
Category 10: **Processing of Sold Products**	222.2	1.9%	NR, CL
Category 11: **Use of Sold Products**	1,097.8	0.4%	R, CL
Category 12: **End-of-Life Treatment of Sold Products**	1.7	0.01%	R, CL
Category 13: **Downstream Leased Assets**	10.2	0.1%	NR, CL
Category 14: **Franchises**	11.1	0.1%	NR, CL
Category 15: **Investment**	4,466.4	38.9%	NR, CL



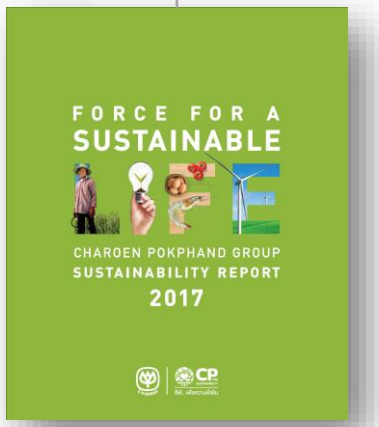
Scope 3 screening to identify relevant emission sources



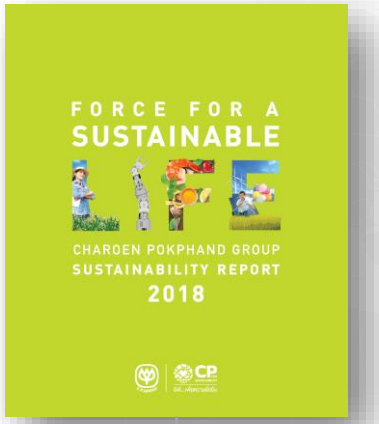
GHG Data Reporting & Disclosure



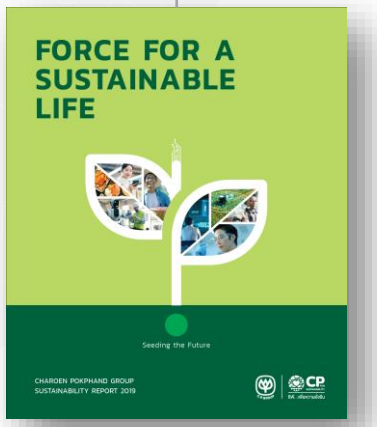
2017



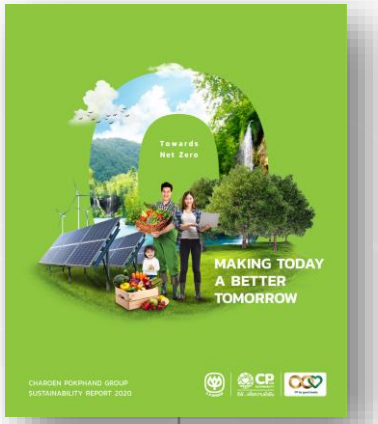
2018



2019



2020



2021

GRI STANDARDS

CDP
DISCLOSURE INSIGHT ACTION

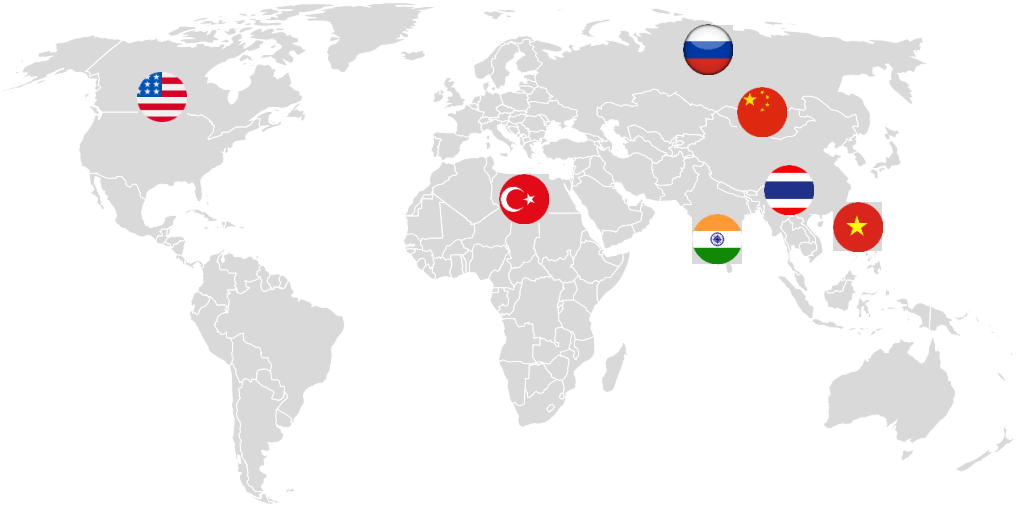
COMMUNICATION ON PROGRESS

UN GLOBAL COMPACT

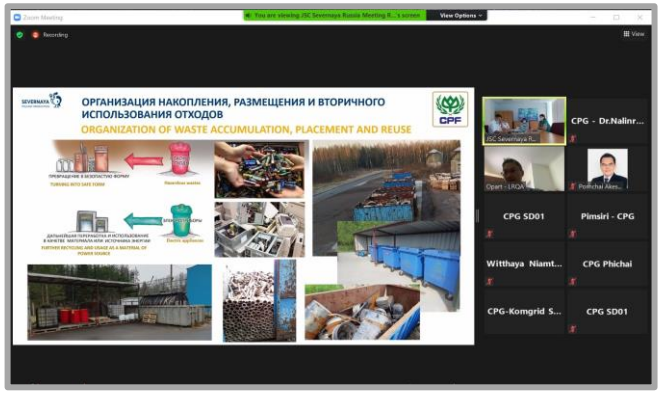
This is our **Communication on Progress** in implementing the Ten Principles of the **United Nations Global Compact** and supporting broader UN goals.

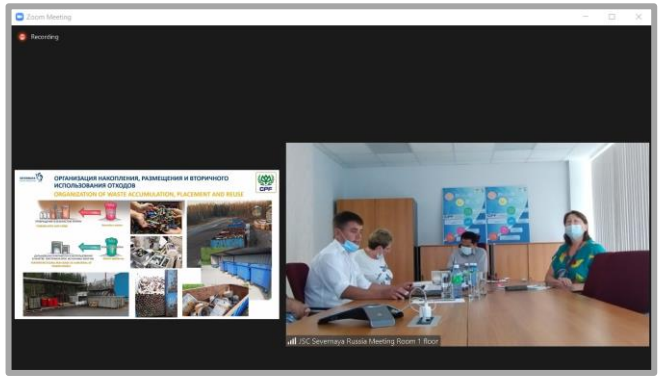
We welcome feedback on its contents.

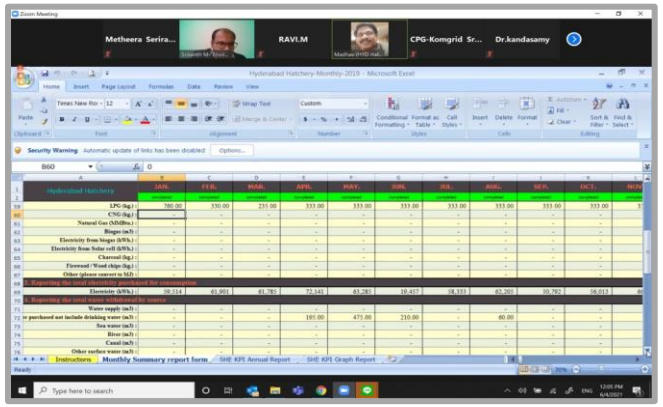
Verification Process During COVID-19 Situation



Country	Total Number	On Site	Remote
▪ THAILAND	8		✓
▪ CHINA	25		✓
▪ VIETNAM	10		
▪ INDIA	2		✓
▪ TURKEY	2		✓
▪ RUSSIA	2		✓
▪ USA	2		✓







Sustainability Indicators to be Verified

GRI STANDARDS | **Topic-specific disclosures**

General Disclosures GRI 102

Disclosure 102-16 — 2016
Values, principles, standards, and norms of behavior

a) A description of the organization's values, principles, standards, and norms of behavior

Disclosure 102-17
Mechanisms for advice and concerns about ethics

a) A description of internal and external mechanisms for:
   i. seeking advice about ethical and lawful behavior, and organizational integrity;
   ii. ii. reporting concerns about unethical or unlawful behavior, and organizational integrity.

Environmental GRI 300

Disclosure 302-1 — 2016
Energy consumption within the organization

a) Total fuel consumption within the organization form non-renewable sources
b) Total fuel consumption within the organization from renewable sources
c) Total electricity, heating, cooling and steam consumption in joules, watt-hours or multiples.
d) Total electricity, heating, cooling and steam sold in joules, watt-hours or multiples.
e) Total energy consumption, in joules or multiples.

Disclosure 303-3 — 2018
Water withdrawal

a) Total water withdrawal from all areas in mega-liters
b) Total water withdrawal from all areas with water stress in mega-liters and breakdown by sources
c) Breakdown total water withdrawal from each sources in mega-liters by Freshwater and Other water

Environmental GRI 300

Disclosure 305-1 — 2016
Direct (Scope 1) GHG emissions

a) Gross direct (Scope 1) GHG emissions in metric tons
b) Gases included in the calculation
c) Biogenic CO_2 emissions in metric tons of CO_2e.

Disclosure 305-2 — 2016
Energy indirect (Scope 2) GHG emissions

a) Gross location-based energy indirect (Scope 2) GHG emissions in metric tons of CO_2e.
b) If applicable, gross market-based energy indirect (Scope 2) GHG emissions in metric tons of CO_2e.
c) If available, Gases included in the calculation; whether CO_2, CH_4, N_2O or all.

Disclosure 305-3 — 2016
Other indirect (Scope 3) GHG emissions

a) Categories 1. Purchased goods and services
b) Categories 5. Waste generated in operations
c) Categories 15. Investments (CITIC, PING AN, ITOCHU)

Disclosure 305-7 — 2016
Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions

IV. Volatile organic compounds (VOC) (CPPC)

Disclosure 306-3 — 2020
Waste generated

a) Total weight of waste generated in metric tons, and a breakdown of this total.

Disclosure 306-4 — 2020
Waste diverted from disposal

a) Total weight of waste diverted from disposal
b) Total weight of hazardous waste diverted from disposal
c) Total weight of non-hazardous waste diverted from disposal

Environmental GRI 300

Disclosure 306-5 — 2020
Waste directed to disposal

a) Total weight of waste directed to disposal
b) Total weight of hazardous waste directed to disposal
c) Total weight of non-hazardous waste directed to disposal

Specific Indicator
Food Waste

a) Total weight of food waste, with a breakdown

Social GRI 400

Disclosure 403-9 — 2018
Work-related injuries

a) For all Employee , Work- related Injury, High-consequence work-related, Recordable work-related injuries, Work-Related Injury, Hours Worked
b) For all workers who are not employees but whose work and/or workplace is controlled by the organization
c) The work-related hazards that pose a risk of high-consequence injury, including

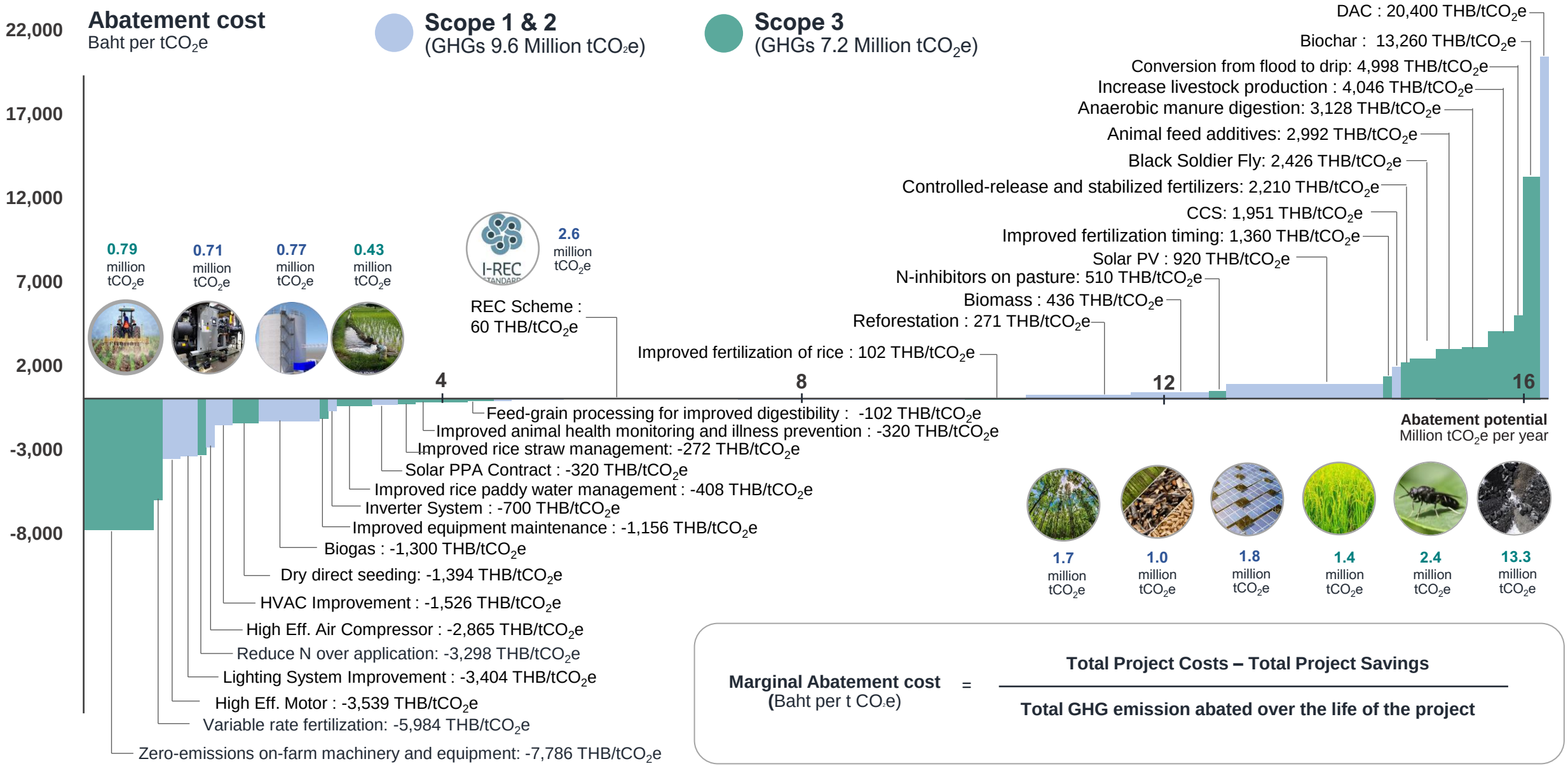
Disclosure 403-10 — 2018
Work-related ill health

a) For all employees
b) For all workers who are not employees but whose work and/or workplace is controlled by the organization
c) The work-related hazards that pose a risk of ill health

Disclosure 405-2 — 2018
Ratio of basic salary and remuneration of women to men

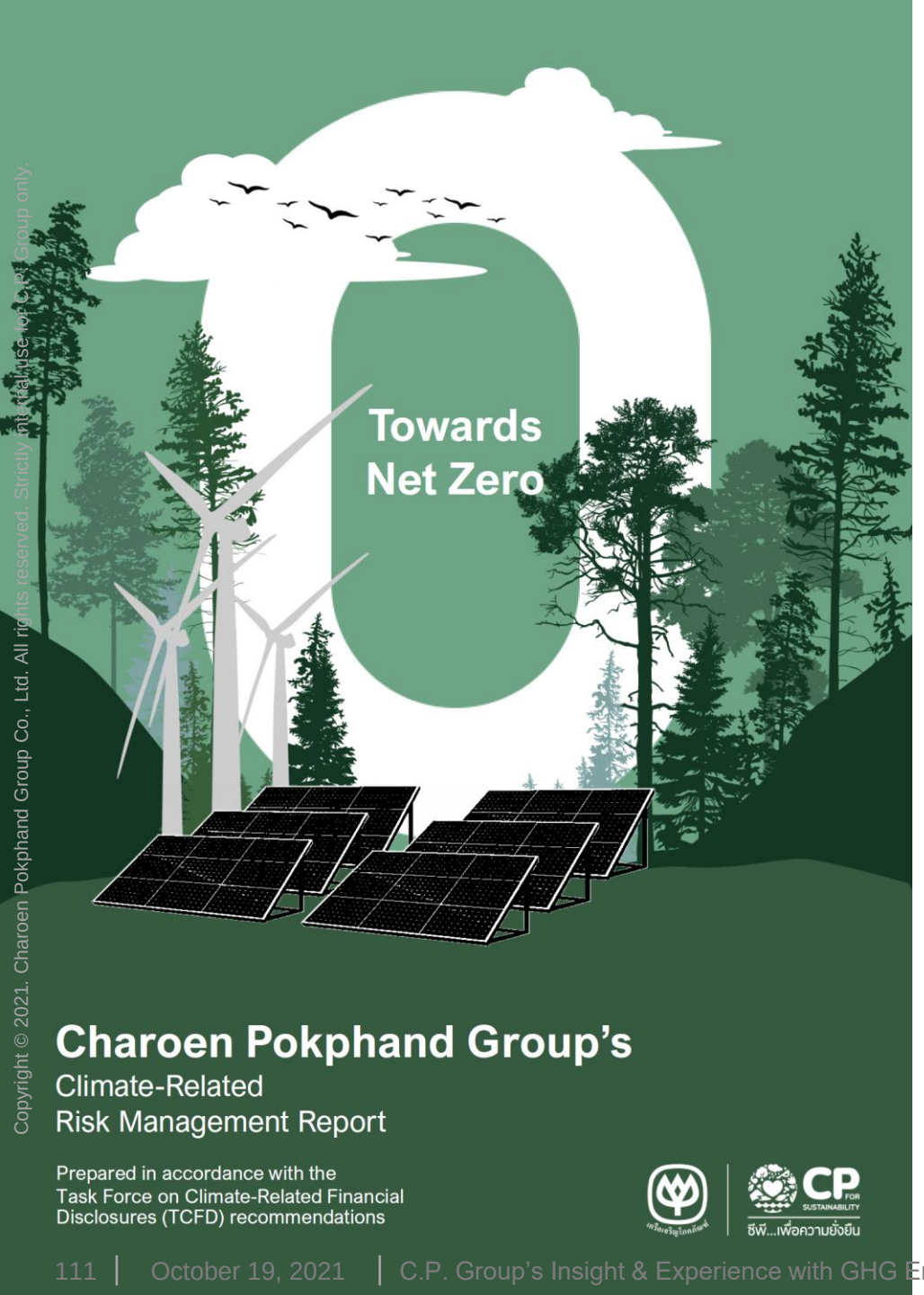
a) Ratio of the basic salary and remuneration of women to men for each employee category, by significant locations of operation.
b) The definition used for 'significant locations of operation'.

Technology Needs Assessment for Climate Change



Marginal Abatement cost (Baht per t CO_2e) = $\frac{\text{Total Project Costs – Total Project Savings}}{\text{Total GHG emission abated over the life of the project}}$

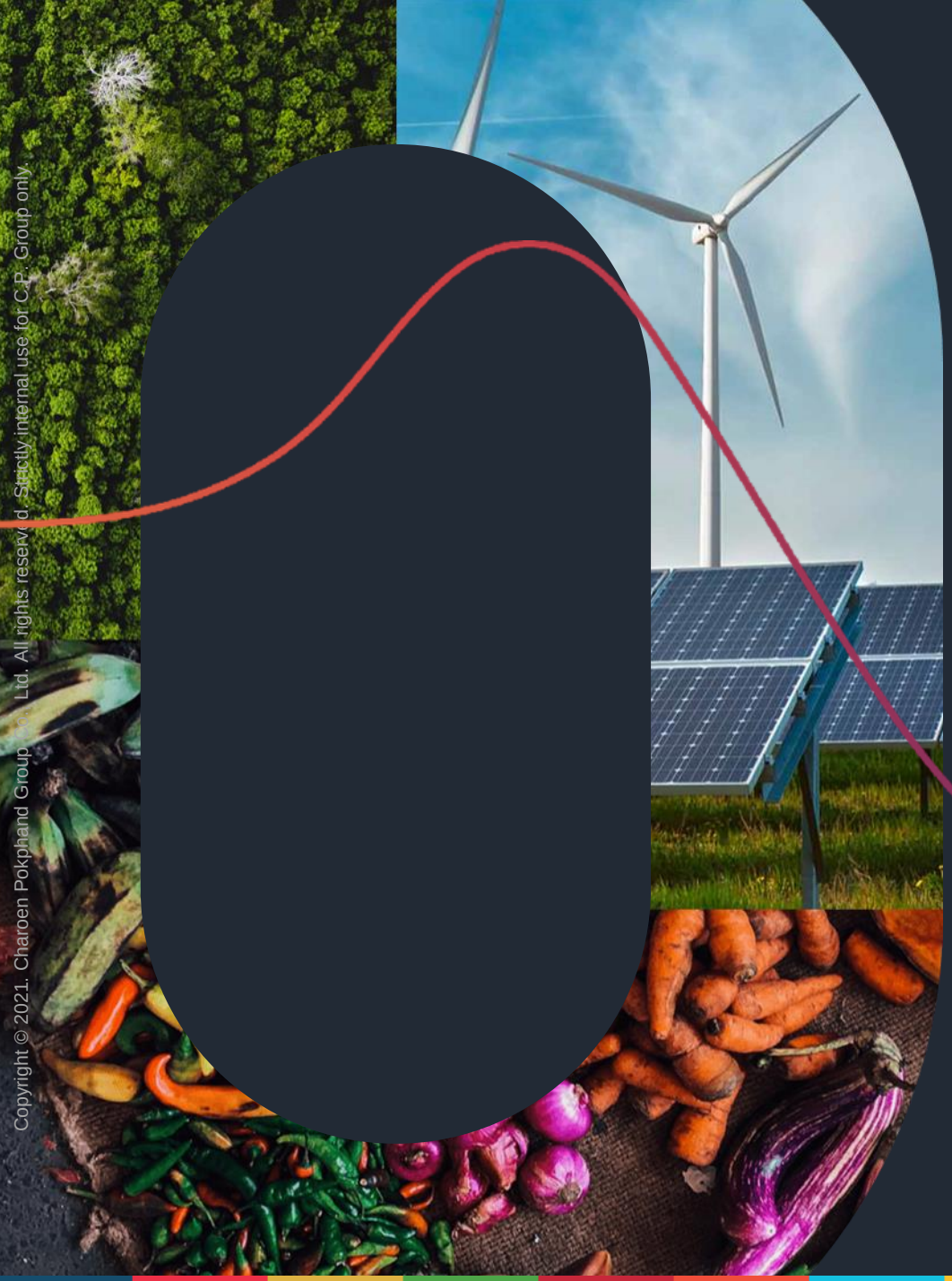
Climate-Related Risk Management Report



TCFD | TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

C.P. GROUP

CLIMATE-RELATED RISKS AND OPPORTUNITIES



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CP FOR SUSTAINABILITY
ซีพี...เพื่อความยั่งยืน

UN GLOBAL COMPACT
Global Compact
LEAD
2021 PARTICIPANT

SGC-Sustainability Development
Sustainability, Good Governance and
Corporate Communications Office, C.P. Group

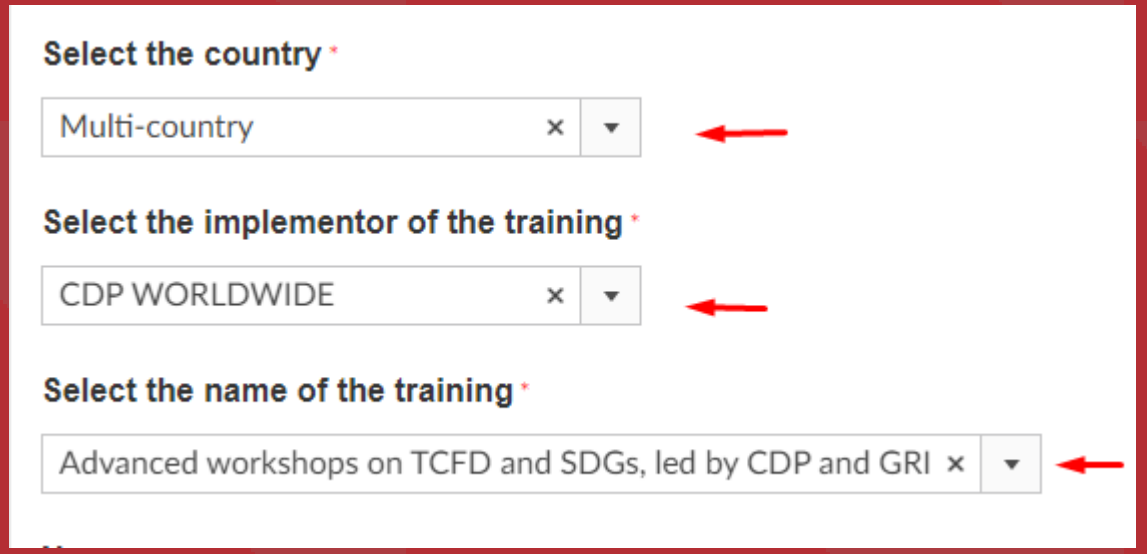
https://www.cpgroupglobal.com/sustainability

Please provide feedback

Survey QR code and link

http://bit.ly/grcf0621

Please select "Multi-country" ; "CDP Worldwide"; "Advanced Workshops..."



Upcoming Workshops

Date	Topic	Led by	Format
18 November	TCFD in Finance	CDP	Virtual workshop

Thank you!