# CPF's
# Sustainability Journey
# Passion towards Net-Zero

Charoen Pokphand Foods PLC (CPF)

August 2025

# Table of Content

# Environment
## "Passion Towards 2030"

# Transition towards Sustainable Business

Our vision is to achieve long-term business growth alongside sustainable and responsible management of natural resources and the environment. By utilizing world-class technology and digital system, we are able to reduce impacts on the society and the environment.



Business

Sustainability

E — Environment

S — Social

G — Governance

# Environmental Sustainability

CPF are committed in conducting sustainable business; protecting the environment with the use of digital technologies, data management, and artificial intelligence to address environmental issues in three key areas:

**GHG Emissions**

**Water**

**Waste**

## World-class technologies implemented by CPF

**Digital Systems and Artificial Intelligence**

**Data Science**

**Innovation and Technology**

CPF is steadfast on **three industry-leading goals** built on our on-going journey to reduce the environmental impact:

## Achieve Net-Zero Emissions

Near-term target for 2030
- Reduce GHG emissions from energy use by 42.0%
- Reduce GHG emissions from land use change and management by 30.3%

Long-term target for 2050
- Reduce GHG emissions from energy use by 90.0%
- Reduce GHG emissions from land use change and management by 72.0%

## Plan for water risk

Develop a plan to manage the impacts of flooding, drought, and water scarcity in all high-risk areas, with a commitment to achieving zero liquid discharge at food processing plants. The pilot plant will be completed by 2025.

## Move to zero waste to landfill

We embrace circular economy principles by maximizing the use of organic raw materials in production, transforming by-products into valuable resources, and eliminating single-use plastics across all CPF operations. Additionally, we are committed to achieving zero waste
to landfill by 2030.

# CPF is dedicated to achieve environmental sustainability across the value chain by 2050

## with 5,000 million baht worth of investment.

**SDG Goals Mapping**



**2 Feedmill**
- Smart Feedmill
- Bunker Oil to Cleaner Fuel
- Zero Liquid Discharge
- Zero Waste to Landfill

**1 Raw Material**
- Traceability System
- Zero Deforestation Sourcing

**3 Farm**
- Environmentally Friendly Feed
- RE100
- Centralized Biomethane
- Hybrid Biogas
- No Land Use Change
- Zero Liquid Discharge
- Zero Waste to Landfill

**4 Ready-to-eat Manufacturer**
- Biomass Energy
- Green Building
- Solar Energy
- Smart Data
- EV Transportation
- Zero Liquid Discharge
- Zero Waste to Landfill

**5 Clients and Consumers**
- Sustainable Packaging
- Environmentally Friendly Feed
- Low-Carbon Products

GHG    Water    Waste

# Setting the Scene

# CPF's Journey Towards Setting
# Net-Zero SBT Targets

## February 2022

**Show Commitment**

Submit statement of purpose
Set Net-Zero goals

## September 2022 – February 2023

**Set the Targets**

Calculate and set GHG emissions reduction targets according to SBTi requirements

## April 2023

**Validation**

Chosen to join pilot project data audit based on Forest, Land and Agriculture Guidance (FLAG)

## July 2023

**Approval**

Net-Zero SBT approved

## August 2023

**Announcement**

Announced the targets

## 2024-Present

**Follow Up**

Annually report GHG reduction to SBTi

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

THE NET ZERO STANDARD
APPROVED NET-ZERO TARGETS

SCIENCE BASED TARGETS | THE NET ZERO STANDARD
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION | APPROVED NET-ZERO TARGETS

**BUSINESS AMBITION FOR 1.5°C**

# A Message from Our CEO

> **CPF commits to reach Net-Zero greenhouse gas emissions across the value chain by 2050.**

## GHG Reduction Target against Base Year 2020

| Near-term Targets by 2030 | **42%** from energy usage | **30.3%** from land use change and management |
|---|---|---|
| Long-term Targets By 2050 | **90%** from energy usage | **72%** from land use change and management |

**Mr. Prasit Boondoungprasert**

Chief Executive Officer
Charoen Pokphand Foods Public Company Limited

## Charoen Pokphand Foods

is the first food processing company in the world

with near- and long-term FLAG SBT validated by the SBTi in an attempt to limit global warming to

**1.5 °C***

*above pre-industrial levels

# Our Scope

Charoen Pokphand Foods Public Company (CPF) operates agricultural and food industry in

# 14 countries

## America
USA

## Europe
UK, Belgium, Türkiye, Russia

## Asia
Thailand, China, Vietnam, India, Cambodia, Philippines, Malaysia, Laos, Sri Lanka

USA

UK

Belgium

Russia

China

Thailand

Laos

Vietnam

Türkiye

The Philippines

Cambodia

Malaysia

Sri Lanka

India

*Remark : Since 2024, the subsidiary in Poland has been restructured as a joint venture, therefore adjusting the scope and recalculating the base year.

# Methodology

# CPF's
# Global GHG Emissions

Scope 1 Non-FLAG **1.8%**

Scope 1 FLAG **1.9%**

Scope 2 **3.5%**

Scope 3 FLAG **61.2%**

Scope 3 Non-FLAG **31.6%**
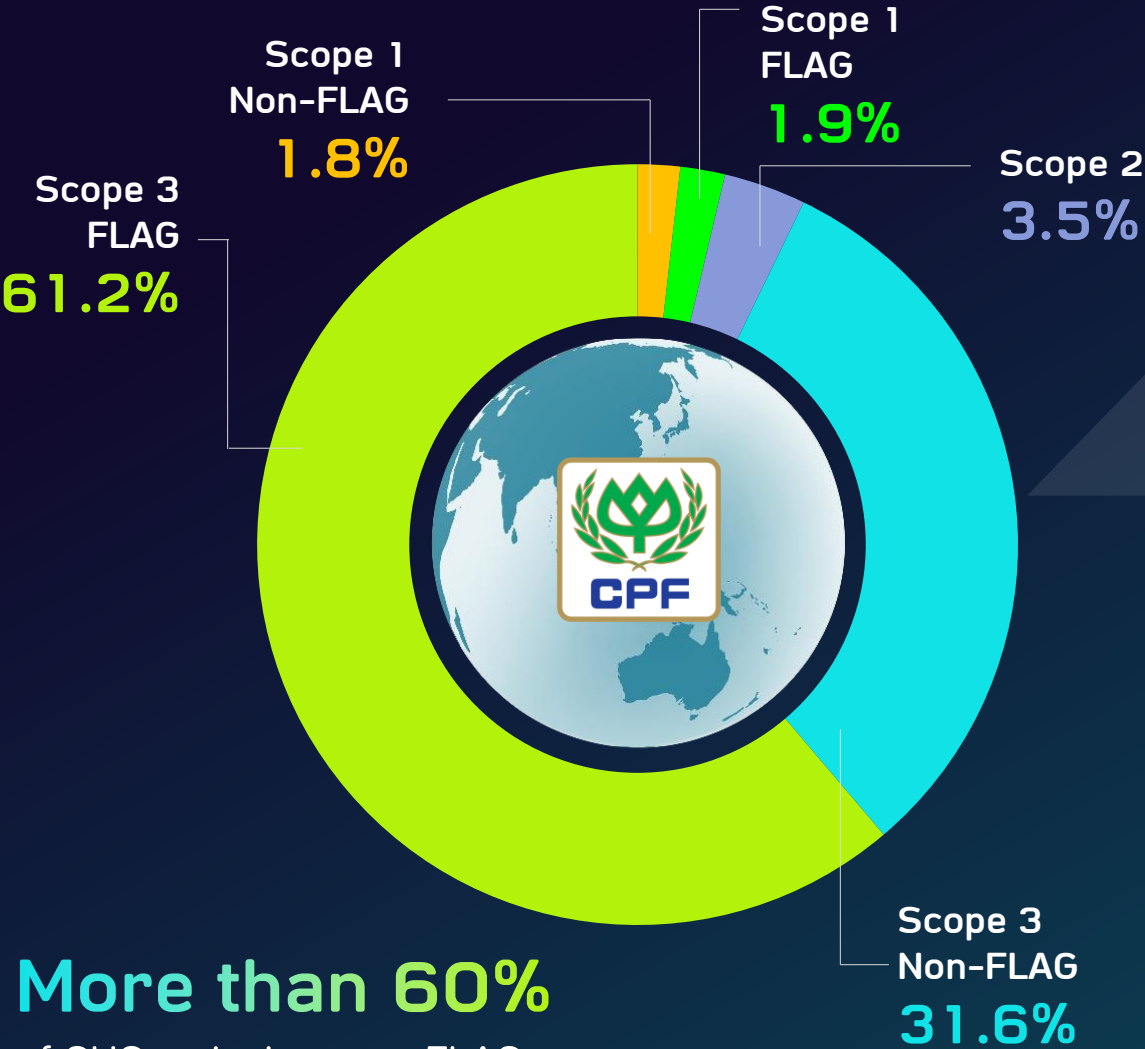
## More than 60%
of GHG emissions are FLAG

## Scope 3 Breakdown
# 92.8%

Scope 3

**Purchased Goods and Services (PG&S)**
76.6%
65.8%    17.2%
(More than 65% comes from raw materials)
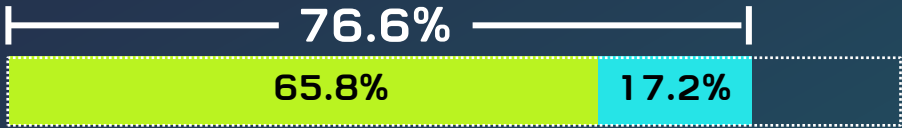
**Upstream Transportation and Distribution**
9.8%
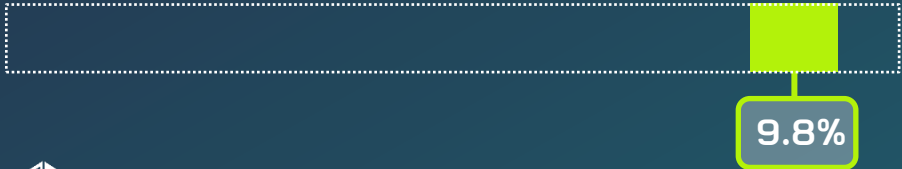
**The Remaining Scope**
7.2%
0.1%   7.1%
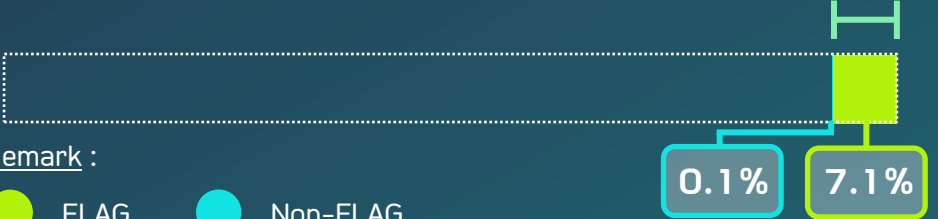
Remark :
FLAG    Non-FLAG

# GHG Protocol and SBTi

$$GHG = CO_2 + CH_4 + N_2O + HFCs + PFCs + SF_6 + NF_3$$

Accounting
**7 GHG emissions**
and reporting
**3 Scopes**
of GHG emissions

Divided into
- **Non-FLAG**
- **FLAG**

## Scope 3
### Indirect

Leased assets

Employees commuting

Business travel

Waste from operation

**3.1** **83% of Scope 3**

**Purchased goods & services (FLAG & Non-FLAG)**

Capital goods

Fuel & Energy related

**3.4** **10% of Scope 3**

**Transportation & distribution**

**Upstream activities**

## Scope 1
### Direct

Company facilities & vehicles
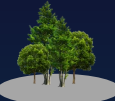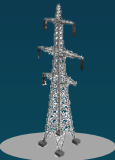
Land use change (FLAG)

Livestock digestion and Manure management (FLAG)

## Scope 2
### Indirect

Purchased electricity, steam and cooling

**CFP**

## Scope 3
### Indirect

Transportation & distribution

Processing of sold products

Use of sold products (FLAG)

End-of-life treatment of sold products

Leased assets

Franchises

Investments

**Downstream activities**

Using
**Forest, Land and Agriculture (FLAG)**

Is SBTi's specific guidance for agricultural and food sector

# FLAG Guidance

(Forest, Land and Agriculture Guidance)

**Covers Scope 1, Scope 3.1: Purchased Goods and Services Emissions, and Scope 3.11: Use of sold products (FLAG)**
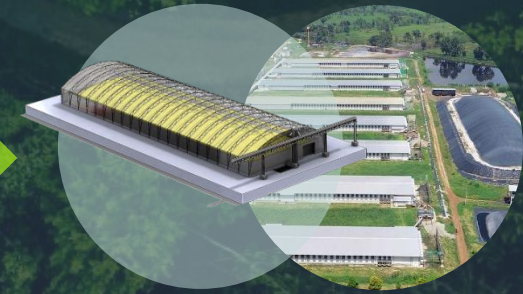
## Land Use Change
from forests to farms

**Change**

**Forest**

**Farm or Factory**

## Land Management
from enteric fermentation, manure management and fertilization

**Enteric Fermentation**

**Manure Management**

**Fertilization**

# Key Actions

**2020 Base Year**

## 2025

**Zero Deforestation Sourcing**
for corn, soybeans, palm oil, cassava of CPF own global operations, and paper of CPF Thailand operation

**100 MW Solar PV**
in Thailand's operations

**Environmentally Friendly Feed**
in 100% of CPF swine and layer own farms

**Cleaner Fuel Conversion**
from bunker oil to LPG in Thailand's operations

## 2030

**Zero Deforestation Sourcing**
for wheat, barley and paper of CPF own global operations

**Methane Capture (High-Efficiency Biogas System)**
100% of CPF own farms in Thailand and Vietnam

**No Additional Land Use Change**
in 100% of CPF own farms

**Coal-Free**
In 100% of CPF own global operations

**Zero Food Waste**
100% of CPF own global operations

**Sustainable Packaging**
100% of CPF own global operations

## 2040

**Methane Capture**
in 100% of CPF own global farms

**100% Smart Feedmills**
in CPF global operations

## 2050

**Decarbonization**
in all of CPF upstream road & sea freight

**Decarbonization**
of 100% of CPF goods suppliers and capital goods

**Renewable Electricity**
100% of CPF own global operations

**Electric Vehicles**
in 100% of CPF own global operations

**Scope 1+3 (FLAG)**
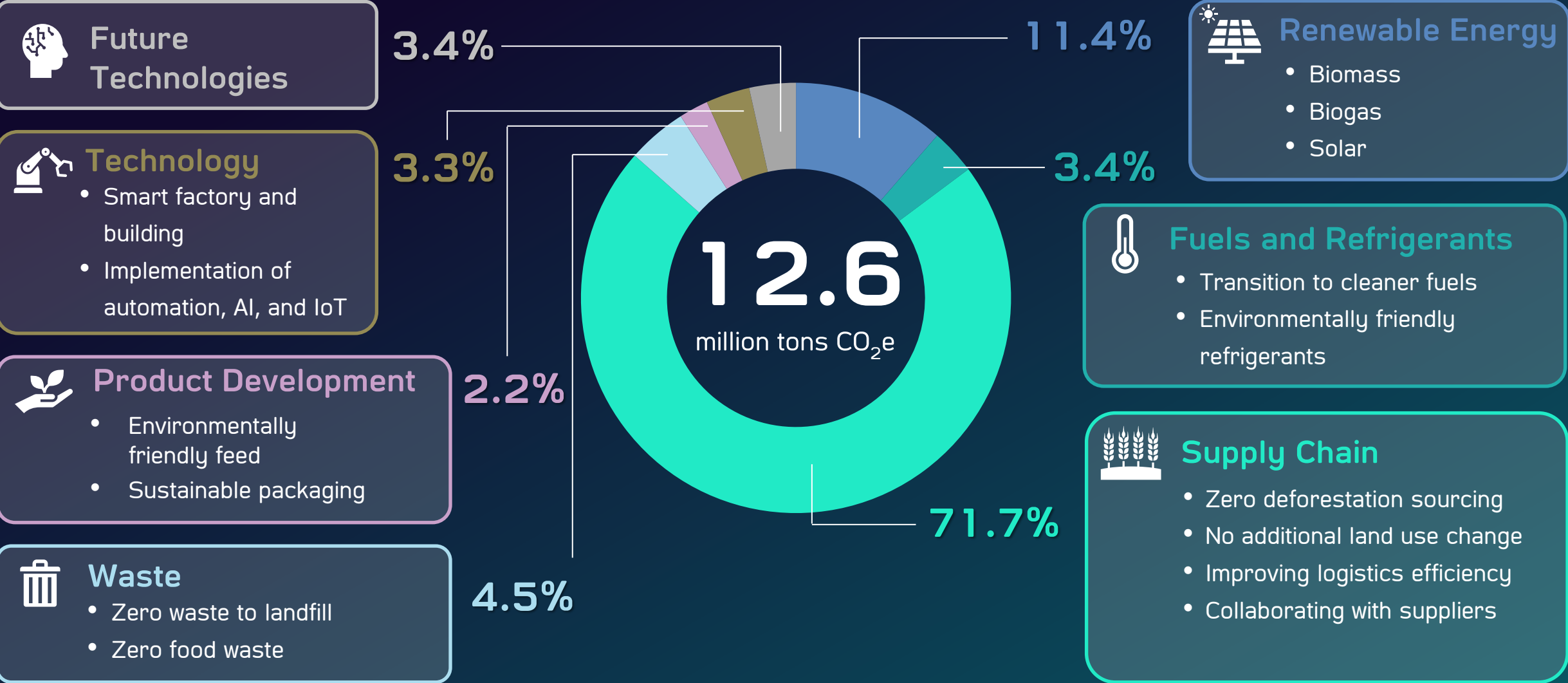
### 2030 Target
- FLAG: 30.3%
- Non-FLAG: 42%

**Scope 1+2+3 (Non-FLAG)**

### 2050 Target
- FLAG: 72%
- Non-FLAG: 90%

**In achieving**

# GHG Emissions Reduction Targets by 2030

**Future Technologies**

**Technology**
- Smart factory and building
- Implementation of automation, AI, and IoT

**Product Development**
- Environmentally friendly feed
- Sustainable packaging

**Waste**
- Zero waste to landfill
- Zero food waste

**12.6**
million tons $CO_2e$

3.4%

3.3%

2.2%

4.5%

11.4%

3.4%

71.7%

**Renewable Energy**
- Biomass
- Biogas
- Solar

**Fuels and Refrigerants**
- Transition to cleaner fuels
- Environmentally friendly refrigerants

**Supply Chain**
- Zero deforestation sourcing
- No additional land use change
- Improving logistics efficiency
- Collaborating with suppliers

# 4 Intelligences Strategies

# CPF Net-Zero Strategies Driven by 4 Intelligences

## C

### C – Carbon Reduction from Sustainable Sourcing

## P

### P – Power Circulation

## F

### F – Future Generation

## Net-Zero

### Network

**Driven by 4 Intelligences**

### Sourcing

Sustainable Traceability

Zero Deforestation Sourcing

### Operations

Renewable Energy (biomass energy, biogas and solar power)

Electric Vehicle

### Data

Net-Zero at One Click

### Intelligent Operations

Smart Production

Smart Building

### Communication

Employees

Clients and Consumers

Partners

Network and alliances

# C – Carbon* Reduction from Sustainable Sourcing

*Carbon dioxide equivalent (CO$_2$e)
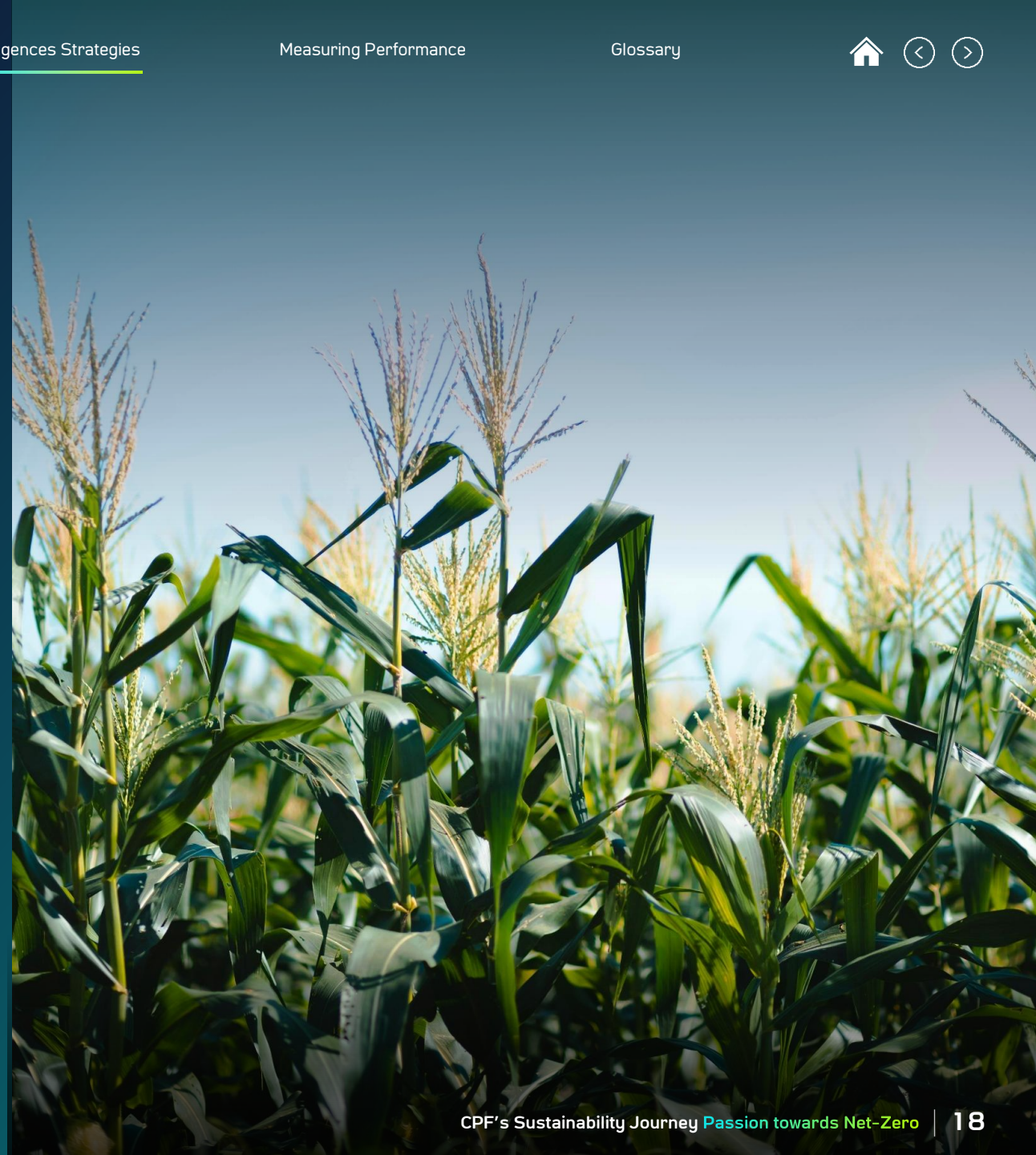
# Traceability System

## Our Ambitions

- Achieve zero deforestation sourcing goals for corn, soy, palm oil and cassava by 2025

- Expand zero deforestation sourcing towards wheat, barley and paper by 2030

- Create positive impacts on biodiversity by 2030

- Expand FOR FARM application to neighboring countries of Thailand

## Key raw materials sourcing

Corn        Soy        Palm Oil        Cassava

## Operation in Thailand

**100%**
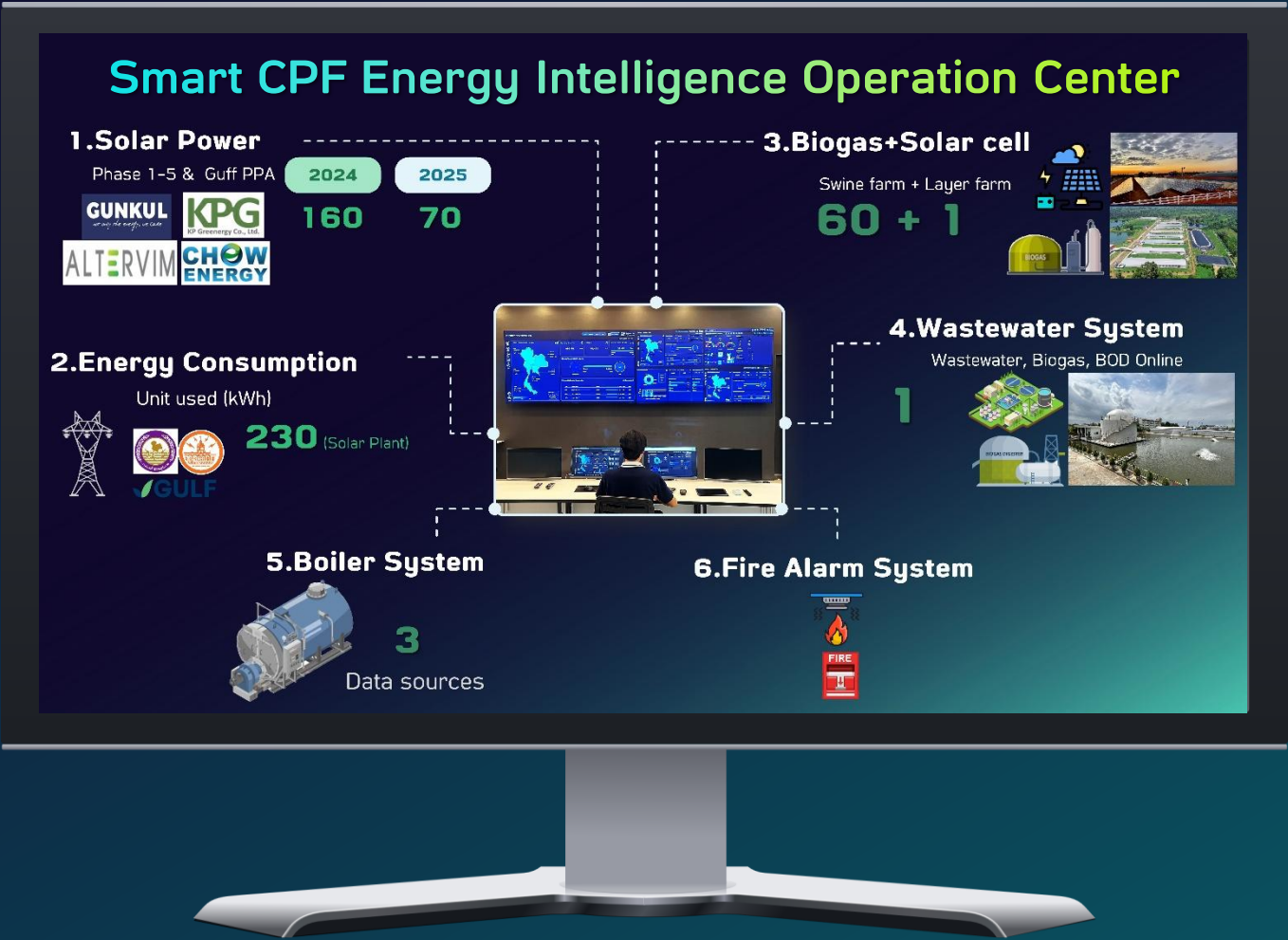of corn sourced by CPF comes from deforestation-free areas

GET IT ON
Google play

# P – Power
## Circulation

# Smart Energy
## Smart CPF Energy Intelligence Operation Center



### Smart CPF Energy Intelligence Operation Center

**1. Solar Power**
Phase 1-5 & Guff PPA
| 2024 | 2025 |
GUNKUL   KPG   ALTERVIM   CHOW ENERGY
160     70

**2. Energy Consumption**
Unit used (kWh)
GULF
230 (Solar Plant)

**3. Biogas+Solar cell**
Swine farm + Layer farm
60 + 1

**4. Wastewater System**
Wastewater, Biogas, BOD Online
1

**5. Boiler System**
3
Data sources

**6. Fire Alarm System**

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In 2024:
> **200** data points
Achieve 100% by 2026

# Renewable Energy

**2024**

Ratio of renewable energy consumption
## 34%

GHG emissions reduced by
## 710,000 tCO$_2$e

Equivalent to installing solar power system of
## 980 MW

**Since 2022**
## 100%
coal-free
switching to biomass usage in Thailand and Vietnam operations and expanding globally by 2030

## 67%
Biomass

## 31%
Biogas

## 2%
Solar

CPF Thailand has begun replacing bunker oil with **LPG** to support cleaner energy use, aiming to complete by **2025**.

# 100%

## Renewable Energy Farm
### (RE100 Farm)

📍 **Pilot Project**
Complex Layer Farm
in Chanthaburi Province

☁⬇ GHG Emissions Reduction
**over 16,500** $tCO_2e$ /year/farm

🚩 **by 2030**
in 8 Complex Layer Farms




## Source of Electricity



**5%**
Renewable Energy
Certificate: REC

**70%**
Biogas Energy

**25%**
Solar Power

**\*Remark**: Purchase RECs to offset external electricity usage for emergency case.

# EV Trucks

### By 2030
CPF aims to use
### > 300 EV trucks

### Pilot Project
First EV truck in CPF by CP Foton

More than **4.7** $tCO_2e$ / year
GHG emissions reduced

More than **220** kilometers
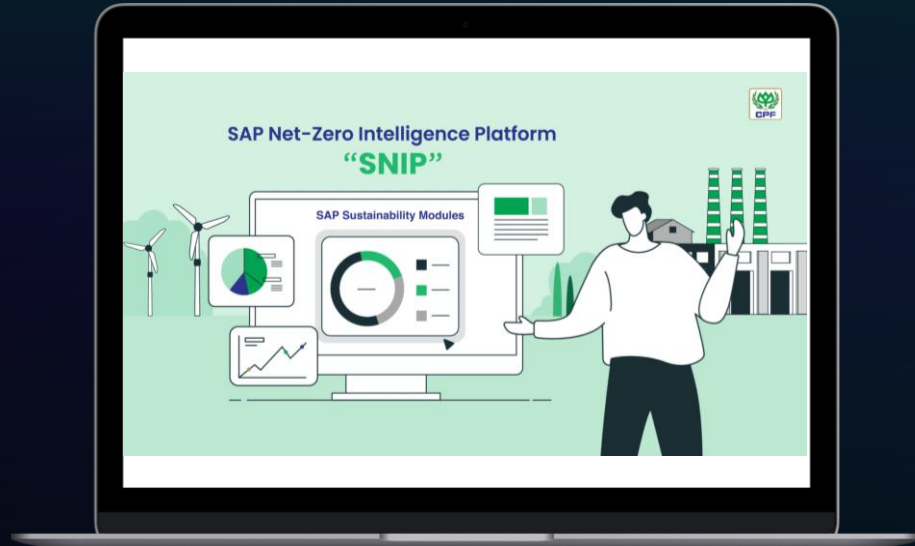average distance per single charge

# F

# F- Future
## Generation

# SAP Net-Zero Intelligence Platform (SNIP)

Connecting data across the value chain to record, calculate, analyze, and report carbon emissions along with other environmental metrics.



**The world's first company to implement SAP Sustainability Solutions**

# SAP Sapphire
ORLANDO | MAY 2025



SNIP was selected as one of the global sustainability highlights from **over 100 countries** and invited as an official speaker at **SAP Sapphire 2025** in Orlando to showcase the development of SAP Net-Zero Intelligence Platform on the global stage.
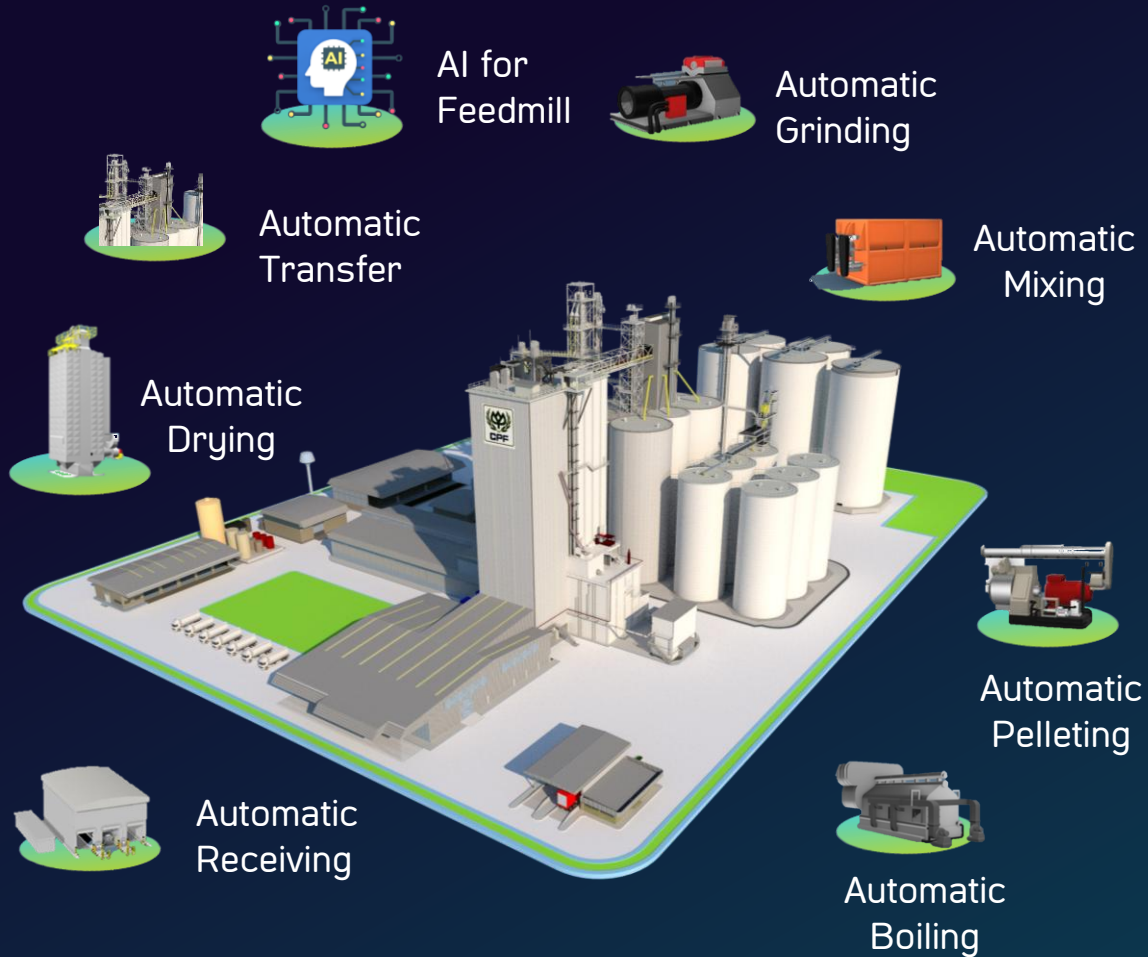
# SAP Customer Excellence Awards SEA 2025

SINGAPORE | JULY 2025



SNIP achieved **1st Runner-Up** in the Business Data category at the **SAP Customer Excellence Awards SEA 2025** in Singapore, highlighting the company's excellence in utilizing business data for innovation and sustainable growth.

# Smart Feedmill

AI for Feedmill

Automatic Grinding

Automatic Transfer

Automatic Mixing

Automatic Drying

Automatic Pelleting

Automatic Receiving

Automatic Boiling

## Machine to Machine : Smart Boiler

The program controls smart boilers which produce steam of sufficient quality and volume necessary to the production. It is controlled by AI which communicates Machine to Machine to maximize efficient energy use.

AI

- Improved livestock feed quality
- Enhanced production efficiency

Reduce energy use

**25%** per ton of feed

- Reduced production costs
- Reduced waste
- Reduced electricity consumption
- Minimized workload

# Smart Factory

Concept :

## All that are visible are manageable

## Use of Visualization Technology

### Production Process

- Increase efficiency
- Reduce idle time
- Reduce GHG emissions



## Operational Data Visualization : MES
(Manufacturing Execution System)

The solution software connects data from equipment, machines and organization-level application which allows users to see overall production and helps increasing efficiency and control the entire production.



## On-Floor Management :
Edge AI & Machine Learning (Manufacturing Execution)

The machine system which uses cameras to process picture data and control operations to enhance production efficiency.

# Smart Factory and Building

## Building Information Modeling (BIM)
for design and construction

## Digital Twin
for building operations and management

## Augmented Reality (AR/VR)
for buildings audit
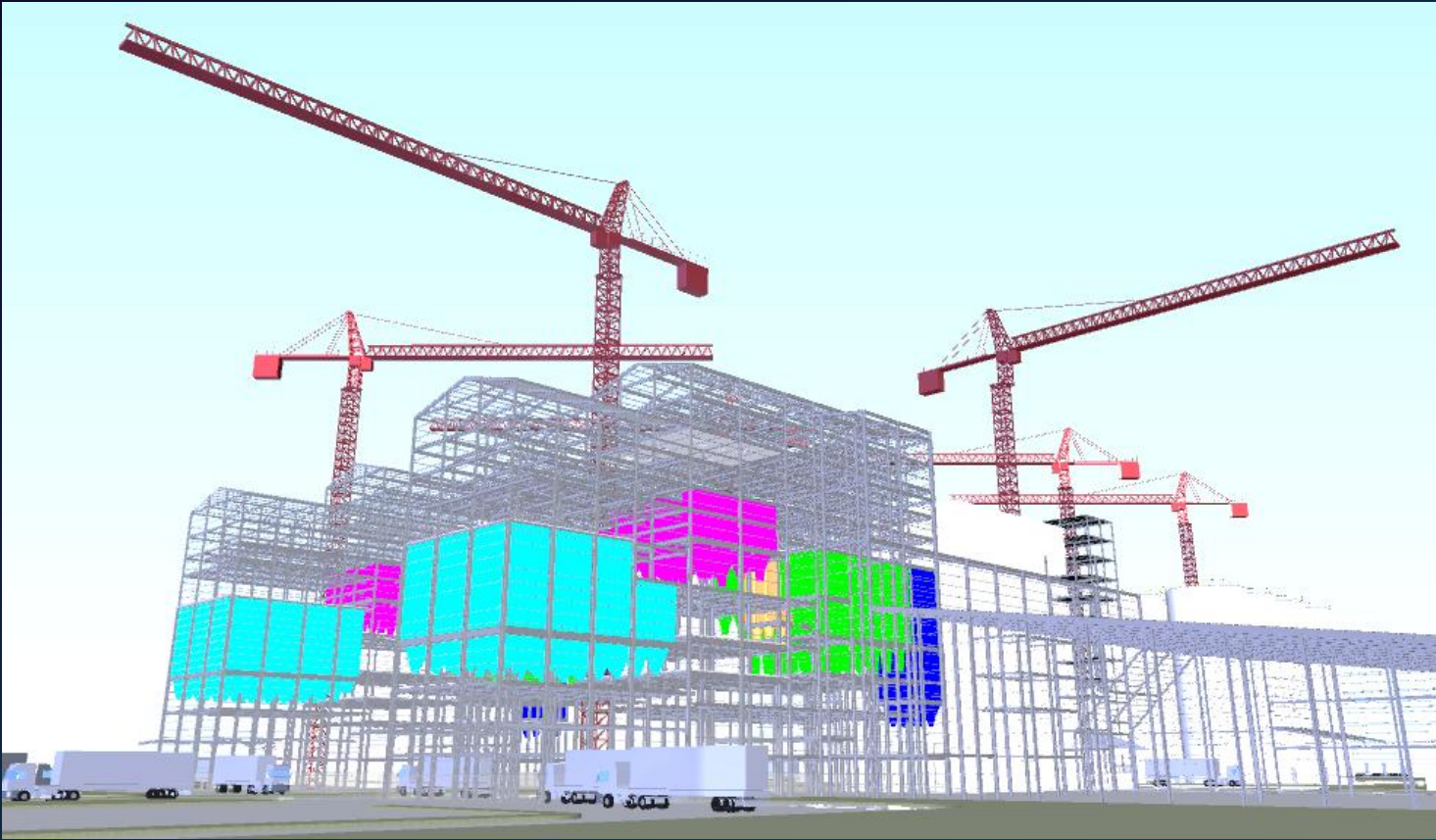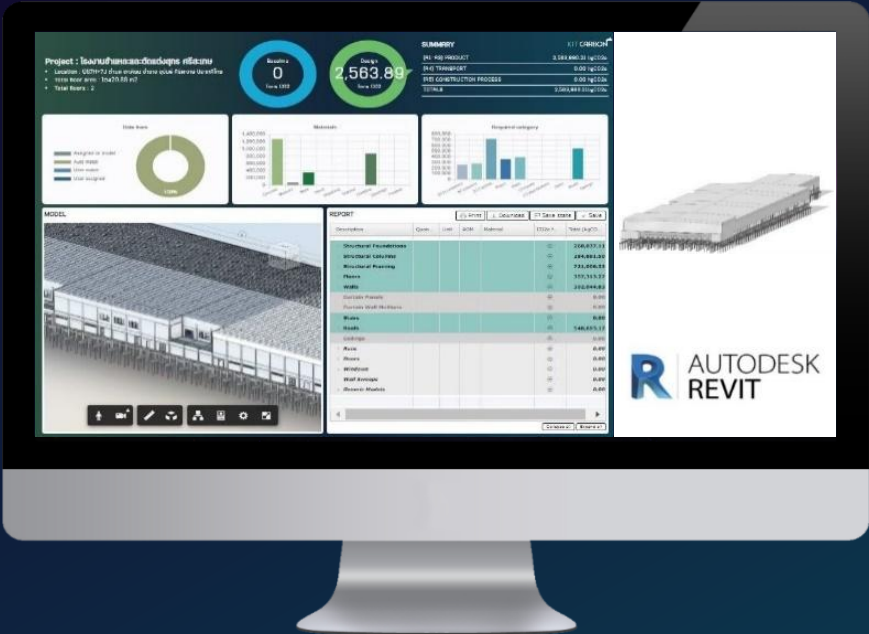


**10** projects with a total value of over **700 million baht** covering all BUs.

- Reduce GHG emissions
- Reduce expenditure
- Improve indoor environmental quality

# Smart Building
## Green Building



## Refrigerants Usage Measure

### Limit Refrigerants for Business Operations

According to Kyoto Protocol to the United Nations Framework Convention of Climate Change

Carbon Dioxide

Ammonia

Hydrocarbon

HFOs and certain HFC

## Environmentally Friendly Construction Materials

- Low carbon materials
- Environmentally friendly refrigerants
- Low Volatile Organic Compounds (Low VOCs) materials

## Energy Efficient Building

Electricity reduction
### 35%

Water reduction
### 45%

## Hygiene and Safety

- Interior air quality
- Sufficient lighting
- Increasing green areas

### Reduce GHG Emissions > 6,000 tCO$_2$e

# Smart Building
## 7 Green Building Projects



**Khon Kaen Office Building**



**Si Sa Ket Swine Slaughtering Plant**



**Samut Prakan Laboratory**



**Nong Chok Center of Engineering Excellence**



**Nakhon Ratchasima 5 Star Factory**



**Lopburi Swine Slaughtering and Processing Plant**



**Phanom Sarakham Duck Slaughtering Plant**

# Upcycling Products from Plastic Waste

upcycling plastic waste from production processes into products such as furniture, decorative panels, and restroom partitions.

## Eco-Friendly Plastic Roads

A pilot project utilizing plastic as a substitute for asphalt at the Center of Engineering Excellence.



**Extruded Plastic Sheets**



**Furniture**
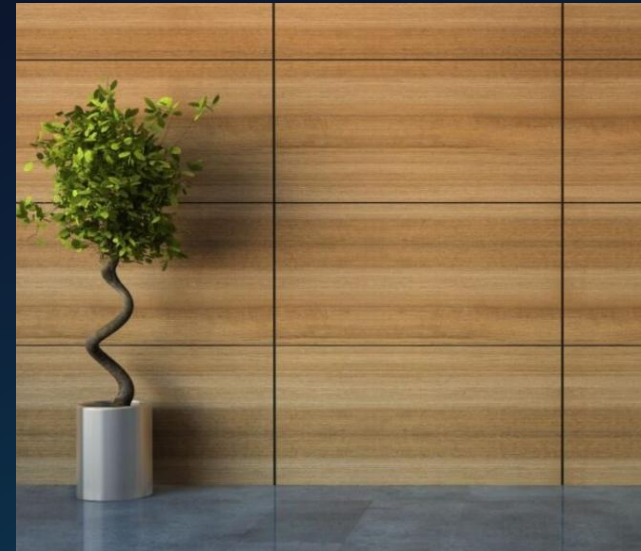


**Decorative Panels**



**Restroom Partitions**

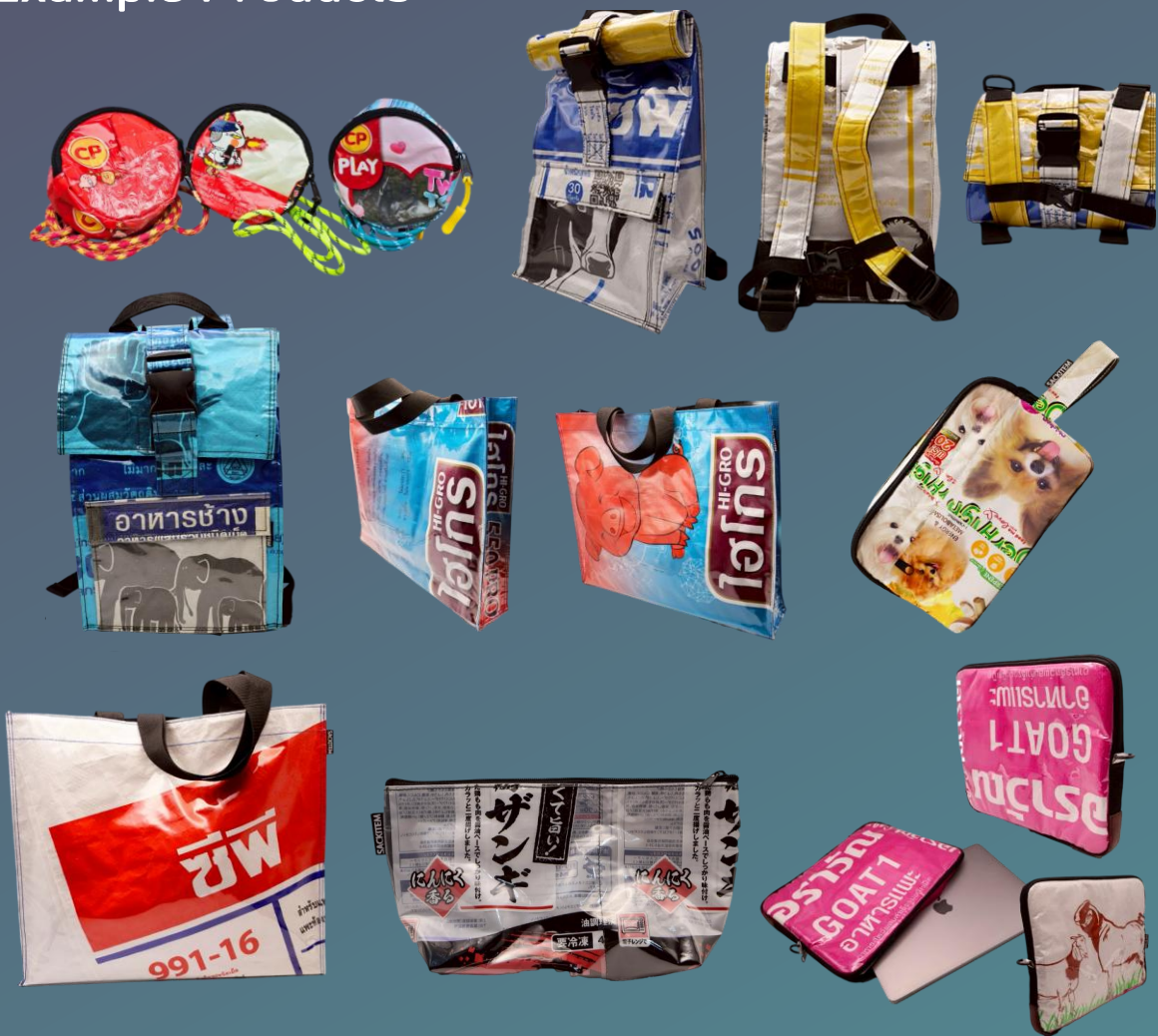# Upcycling Products from Packaging Waste

## Loop Bag

Turning waste into bags adds value through material reuse, promoting resource efficiency and maximizing benefits.



**Packaging Waste**

## Example Products

# Net-Zero

## Network

# Employee Engagement

## Net-Zero SBT 101

The course aims to build basic understandings of our Net-Zero journey to create awareness among all our employees.

**100%**
**of Thailand's office employees**
completed courses in April 2024
and overseas expansion to achieve 100% by 2030.

# SME Supplier Engagement

## SMEx

We enhance our SME partners' capabilities through seminars and excursions, reinforcing our commitment to advancing sustainability-oriented global trade with over 100 partner companies.

- ✓ Low-GHG Raw Materials
- ✓ CFO Certified Suppliers
- ✓ Lower Carbon Tax
- ✓ Cost Control
- ✓ Sales Opportunity

### Thailand Greenhouse Gas Management Organization (TGO)
- ○ Supporting SMEs with knowledge on CFO

### Faculty of Engineering Chulalongkorn University
- ○ Providing knowledge to enhance competitive capability

### CPF
- ○ Upskilling in efficiency and cost reduction using Lean Six Sigma

## MOU
## for Joint Efforts to
## Reduce GHG Emissions

### Office of Small and Medium Enterprises Promotion (OSMEP)
- ○ Funding Access and Project Development Support

### SME Suppliers
- ○ Identify areas for improvement
- ○ Implement projects to reduce environmental impacts (GHG, water, waste)

# Announcement of Collaboration to Enhance Personnel and Organizational Capabilities

## in Climate Change and Environmental Management

Between the Faculty of Engineering, Chulalongkorn University,
Department of Climate Change and Environment, Carbon Institute for Sustainability and Partner Networks

# Partner for GHG Reduction

## Sustainable Packaging

CPF designs and develops environmentally friendly food packaging to encourage reusing, recycling and reducing GHG emissions.
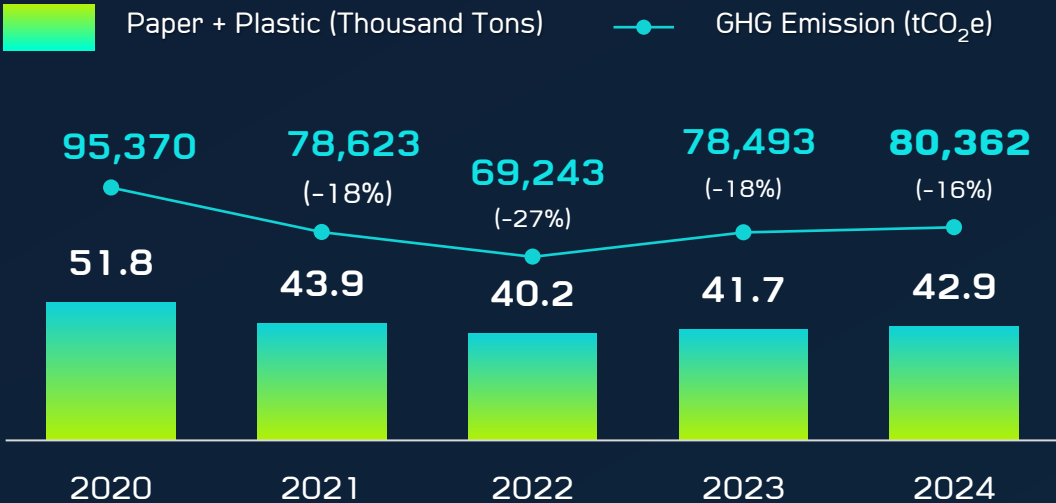
## In 2024

## 82.43%[1]

of our plastic packaging for food products is reusable, recyclable and composable.



### Plastic and Paper Food Packaging
### (Thailand Operations)

| Paper + Plastic (Thousand Tons) | GHG Emission (tCO$_2$e) |

| | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|
| GHG Emission | 95,370 | 78,623 (-18%) | 69,243 (-27%) | 78,493 (-18%) | 80,362 (-16%) |
| Paper + Plastic | 51.8 | 43.9 | 40.2 | 41.7 | 42.9 |

### Plastic Food Packaging

## 27,106 [1] tons



| 0.12% Reusable | 82.20% Recyclable | 0.11% Composable | 17.57% Hard to Recycle |
|---|---|---|---|

(1) Not including mixed plastic and Alufoil. The reported figures covers Thailand, Vietnam, Russia, the Philippines, Malaysia, Türkiye, Laos, and Belgium operations.

# Partner for GHG Reduction

## Converting used packaging to energy

Collaborating with Boehringer Ingelheim (Thailand) to convert used packaging to Refuse Derived Fuel (RDF)

**In collaboration with**

Boehringer Ingelheim

**Packaging**

**GHG Emissions Reduction over**

## 2.4

tons $CO_2e$ / ton of Packaging

**Refuse Derived Fuel replacing Coal**

# Communication with Clients and Consumers

## Environmentally Friendly Livestock Feed

Protein-balanced and age-appropriate enzyme-selected livestock feeds for swine and layer chicken
- Increase food digestion and nutrient absorption
- Contribute to livestock's hygienic growth and welfare
- Reduce excess nitrogen from livestock manure which affects GHG emissions

We control portion and quality of livestock feeds to ensure that all animals receive sufficient and appropriate amount of nutrient.

**Swine**

**Duck**

**Layer Chicken**

### Excess Nitrogen Reduction

**20-30%**
From swine manure

**12-13%**
From layer chicken manure

### GHG Emission Reduction

**74,700**
$tCO_2e$

# Communication with Clients and Consumers

## Eco-Friendly Food

CPF is committed to producing environmentally certified green products.

อาหารรักษ์โลก

เรา | โลก
กินดี | อยู่ดี

### 2024 Performance

**890 Products**
have undergone the carbon footprint assessments and certified with the Carbon Footprint Label by Thailand Greenhouse Gas Management Organization (Public Organization) or TGO

**88 Products**
are classified as low-carbon products with the Carbon Footprint Reduction Label verified by TGO

*Remark: Information as of 31st December 2024

## CP SPACE SAFETY STANDARD

เนื้อสัตว์คุณภาพ มาตรฐานอวกาศ ความปลอดภัยระดับ เดียวกับที่นักบินอวกาศทาน

CP Selection ไก่สดปลอดสาร

## Our Products which Emits GHG Below **Average***

| Fresh Chicken Meat | Chicken Eggs | Fresh Pork |
|---|---|---|
| below average **50%** | below average **30%** | below average **13%** |

***Remark**: Average of each product's GHG emissions in Thailand

# Cooperation with Network and Alliances

## Internal Carbon Pricing

Internal Carbon Pricing in Preparation for EU CBAM

Covering both Non-FLAG and FLAG

Taking CPF global investment decisions into account

| Thailand Operations | 20 USD/tCO$_2$e |
|---|---|
| Overseas Operations | 10-100 USD/tCO$_2$e |

**The Internal Carbon Pricing (ICP) policy announcement is available for download at:**

Announcement on the Internal Carbon Pricing (ICP)

# Cooperation with Network and Alliances

## Safety and Environment

มหาวิทยาลัยมหิดล
คณะสาธารณสุขศาสตร์

Thailand Supply Chain Network

อบก TGO

## Technology and Efficiency Enhancement

Schneider Electric

3M

FLOW TECH

NESA

CPAC

BOSCH

CP FOTON

SAP Sustainability

MAYEKAWA MYCOM

PTTEP

TOYOTA

Boehringer Ingelheim

REPCO NEX INDUSTRIAL SOLUTIONS

BLUESCOPE

FANUC

MAN Energy Solutions

SCG BUILDING & LIVING CARE CONSULTING

## Education

Chula
Chulalongkorn University

PIM PANYAPIWAT INSTITUTE OF MANAGEMENT

# Measuring Performance

# CPF's Total GHG Emissions Across All Scopes

Unit : million tons $CO_2e$

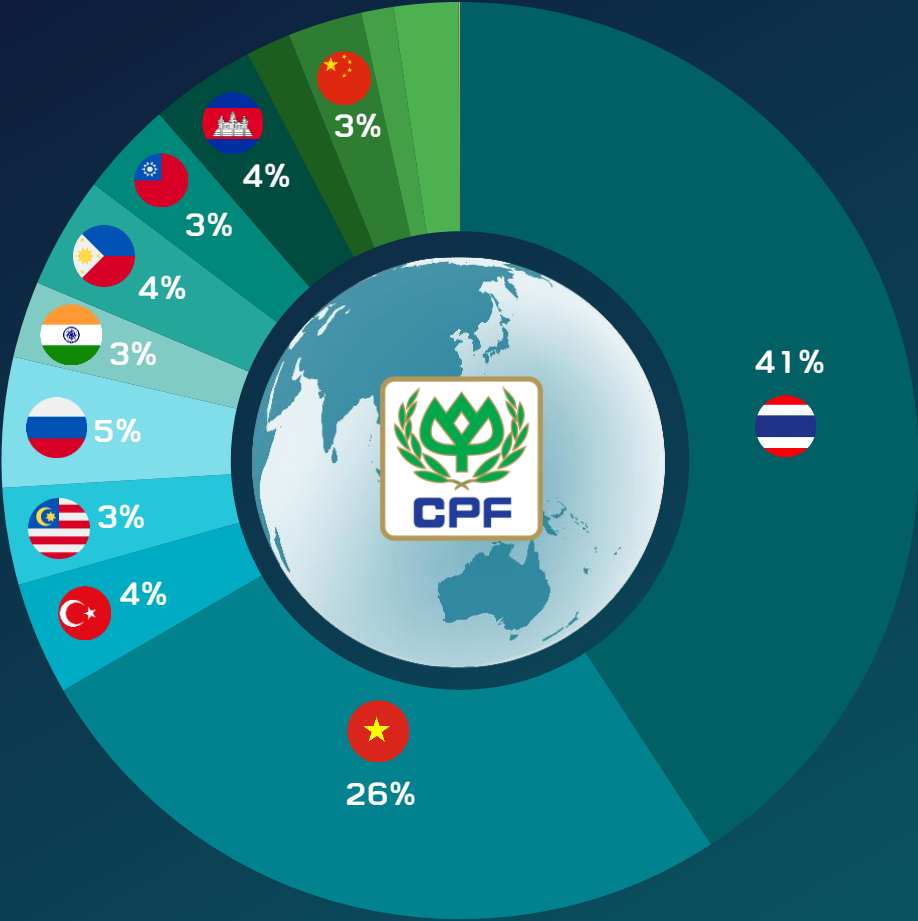| | 2020 Base year | 2024 | 2024 Compared with base year |
|---|---|---|---|
| Thailand | 14.49 | 13.67 | -0.82 |
| Vietnam | 9.91 | 9.40 | -0.51 |
| Turkiye | 2.09 | 1.90 | -0.19 |
| Malaysia | 1.67 | 1.21 | -0.46 |
| Russia | 1.61 | 1.55 | -0.06 |
| India | 1.59 | 0.96 | -0.63 |
| Philippines | 1.26 | 1.40 | +0.14 |
| Taiwan | 1.16 | 1.18 | +0.02 |
| Cambodia | 0.90 | 1.30 | +0.40 |
| United States | 0.68 | 0.51 | -0.17 |
| China | 0.58 | 0.93 | +0.35 |
| Laos | 0.29 | 0.40 | +0.11 |
| United Kingdom | 0.05 | 0.83 | +0.78 |
| Sri Lanka | 0.02 | 0.01 | -0.01 |
| Belgium | 0.003 | 0.02 | +0.017 |
| **Total** | **36.32** | **35.25** | **-0.59** |

## Proportion of GHG Emissions by Country in 2024

- Thailand 41%
- Vietnam 26%
- Russia 5%
- Turkiye 4%
- Malaysia 3%
- India 3%
- Philippines 4%
- Taiwan 3%
- Cambodia 4%
- China 3%

# Proportion of CPF's GHG Emissions in 2024 by Country Zone



High

Low

Europe
2%

America
2%

South Asia and West Asia
8%

East Asia
10%

Thailand
39%

Southeast Asia
39%
*Excluded Thailand

# CPF's Global GHG Emissions in 2024

**GHG Emissions by Scope**

Unit : million tons $CO_2e$

Scope 1 Non-FLAG **1.5%**

Scope 1 FLAG **1.6%**

Scope 2 **3.9%**

Scope 3 FLAG **51.9%**

## 35.3
million tons $CO_2e$

Scope 3 Non-FLAG **41.1%**

| Scope | Value |
|---|---|
| Scope 1 Non-FLAG | 0.2 |
| Scope 1 FLAG | 0.1 |
| Scope 2 | 0.6 |
| Scope 3 Non-FLAG | 5.7 |
| Scope 3 FLAG | 7.1 |

0.0　2.0　4.0　6.0　8.0
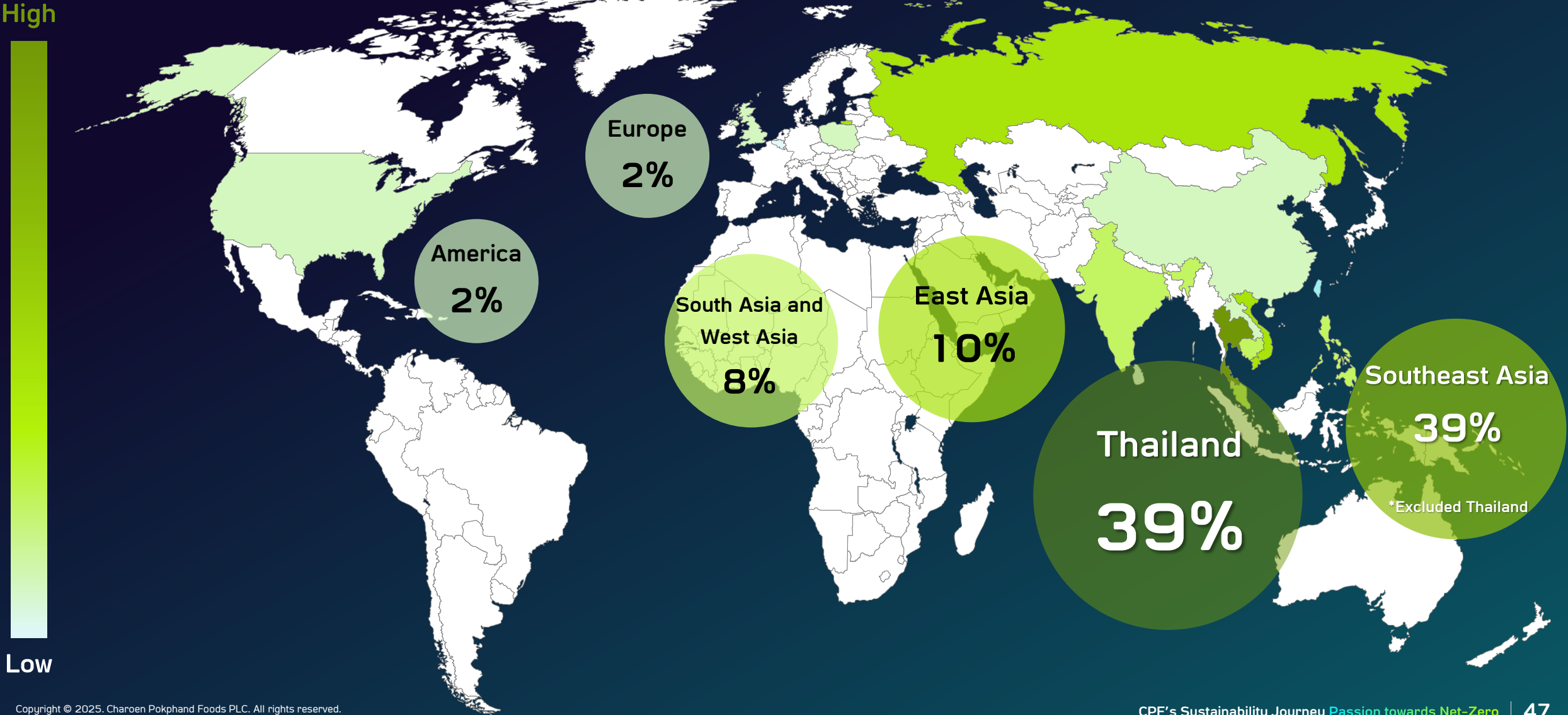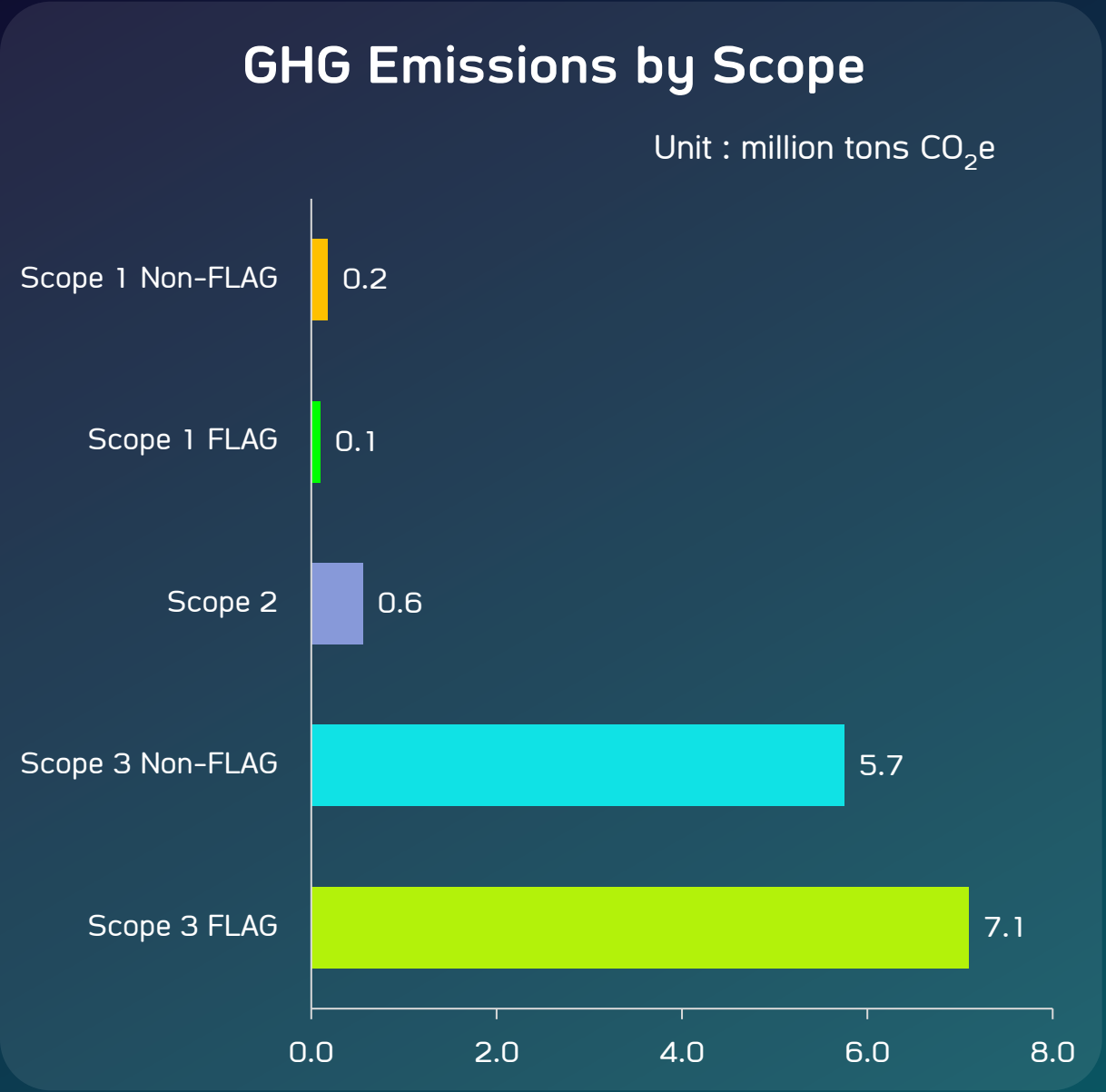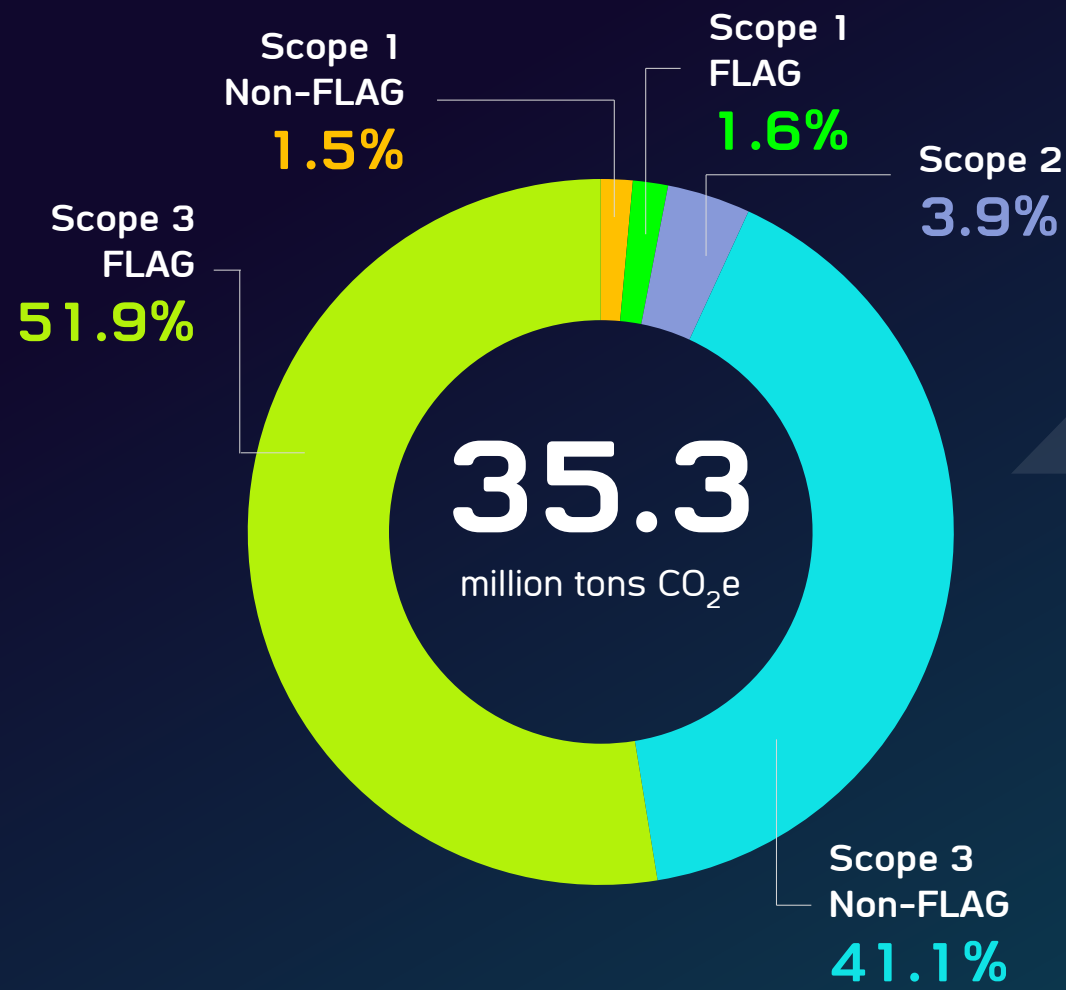
# CPF's Global Scope 3 GHG Emissions in 2024

| Scope 3 (million tCO$_2$e) | 32.7 |
|---|---|
| Cat 01: Purchased good & services | 25.7 |
| Cat 02: Capital goods | 0.1 |
| Cat 03: Fuel & energy related (Excluded from Scope 1 and 2) | 0.4 |
| Cat 04: Transportation & distribution | 2.7 |
| Cat 05: Waste from operation | 0.1 |
| Cat 06: Business travel | 0.01 |
| Cat 07: Employee commuting | 0.3 |
| Cat 08: Leased assets | - |
| Cat 09: Transportation & distribution | 0.1 |
| Cat 10: Processing of sold products | 1.5 |
| Cat 11: Use of sold products | 0.01 |
| Cat 12: End-of-life treatment of sold products | 1.7 |
| Cat 13: Leased assets | - |
| Cat 14: Franchises | 0.04 |
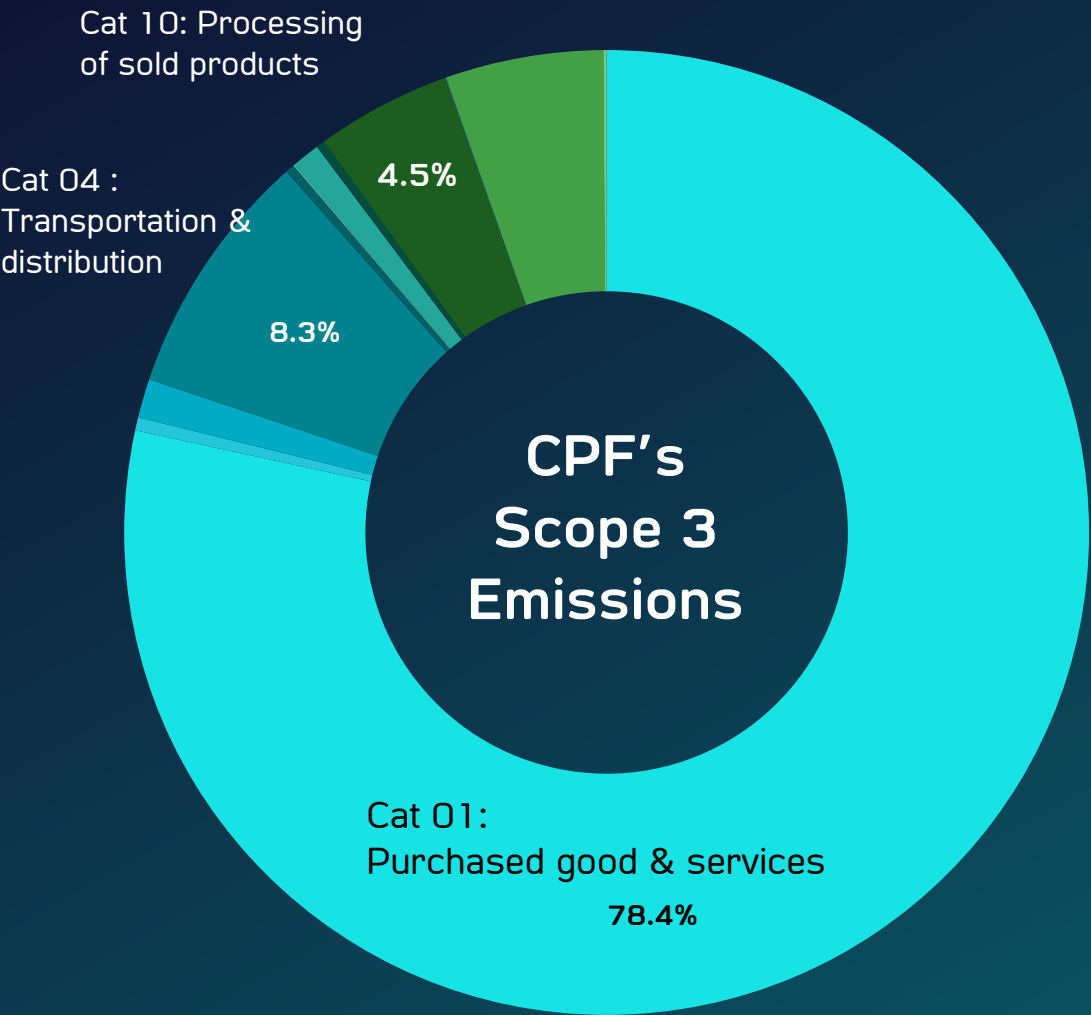
Remark: Cat 06: Business Travel (accommodation): 7.4 thousand tCO$_2$e and Cat15: Investments: 0.8 million tCO$_2$e are not included in the near-term science-based GHG emissions reduction target of CPF.

Cat 10: Processing of sold products

Cat 04 : Transportation & distribution

4.5%

8.3%

CPF's Scope 3 Emissions

Cat 01: Purchased good & services

78.4%

# CPF's Global GHG Emissions Across All Scopes (2020-2024)

Unit : million tons $CO_2e$

- Scope 1 GHG Emissions
- Scope 2 GHG Emissions
- Scope 3 GHG Emissions
- —— SBT Target
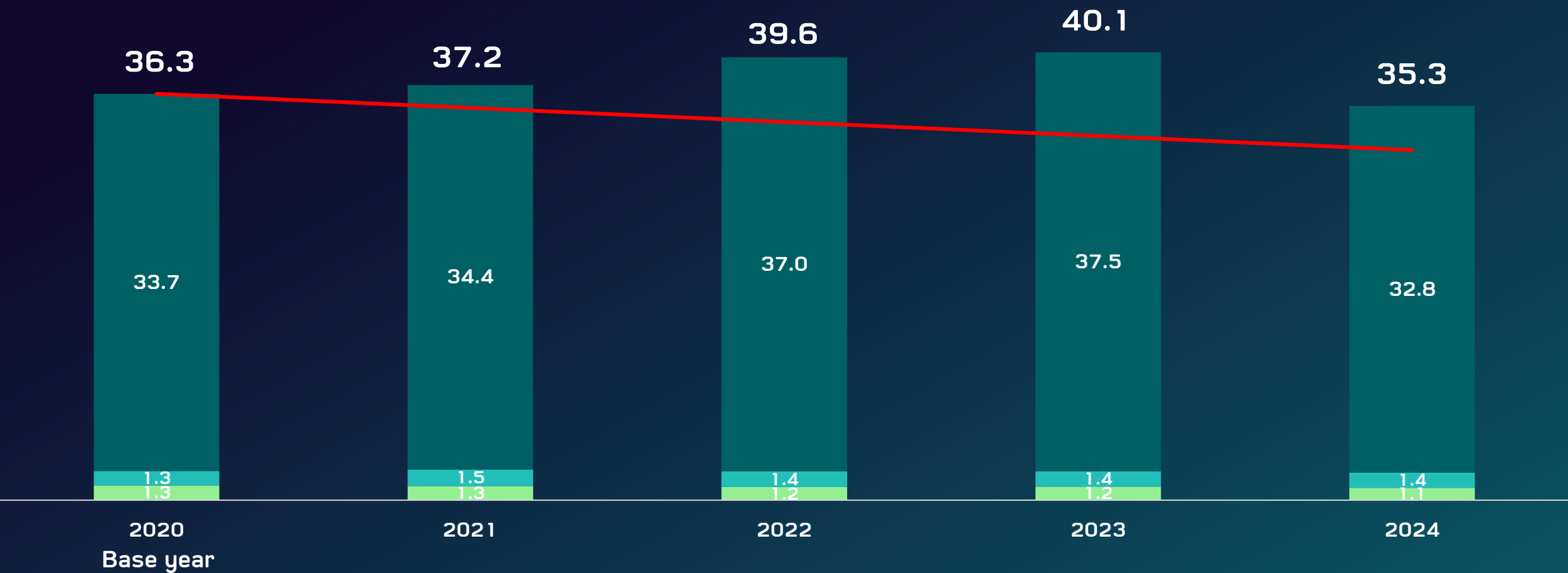
| Year | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|
| Total | 36.3 | 37.2 | 39.6 | 40.1 | 35.3 |
| Scope 3 | 33.7 | 34.4 | 37.0 | 37.5 | 32.8 |
| Scope 2 | 1.3 | 1.5 | 1.4 | 1.4 | 1.4 |
| Scope 1 | 1.3 | 1.3 | 1.2 | 1.2 | 1.1 |

**2020** — Base year

\*Data collection and calculation methods have been adjusted since 2022 onwards
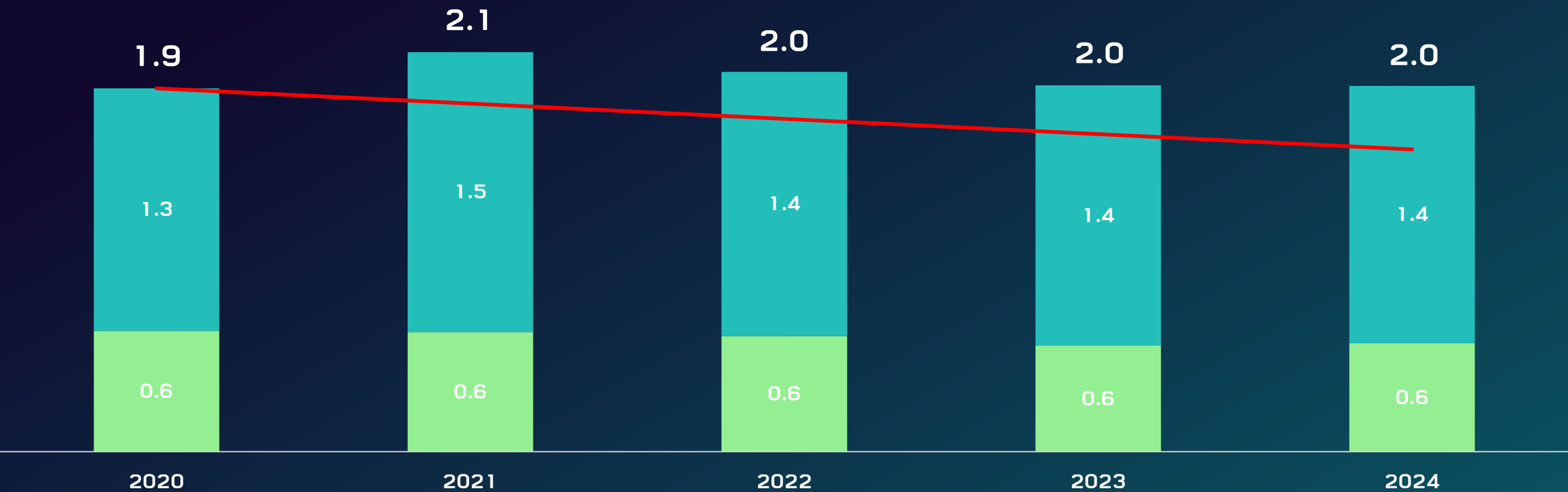\*\*The 2024 data will be revised by June 2025

# CPF's Global Scope 1 Non-FLAG and Scope 2 GHG Emissions (2020-2024)

Unit : million tons $CO_2e$

- Scope 1 Non-FLAG GHG Emissions
- Scope 2 GHG Emissions
- Scope 1 Non-FLAG and 2 SBT Target

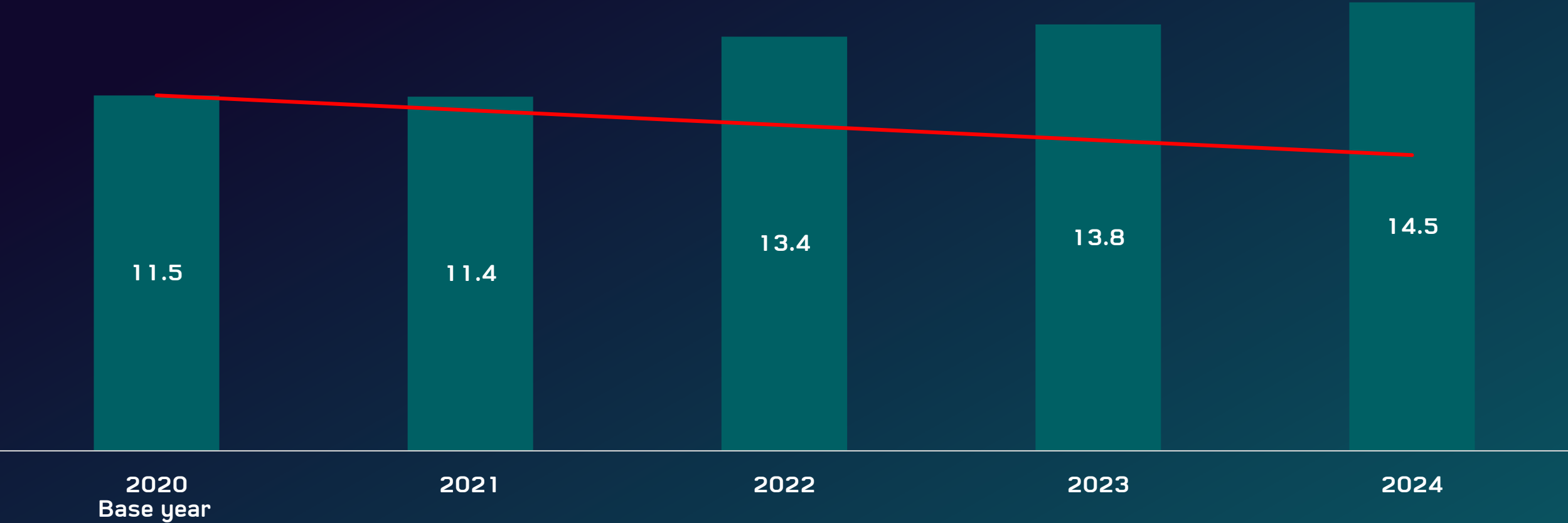| Year | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|
| Total | 1.9 | 2.1 | 2.0 | 2.0 | 2.0 |
| Scope 2 | 1.3 | 1.5 | 1.4 | 1.4 | 1.4 |
| Scope 1 Non-FLAG | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |

*Data collection and calculation methods have been adjusted since 2022 onwards
**The 2024 data will be revised by June 2025

# CPF's Global Scope 3 Non-FLAG GHG Emissions (2020-2024)
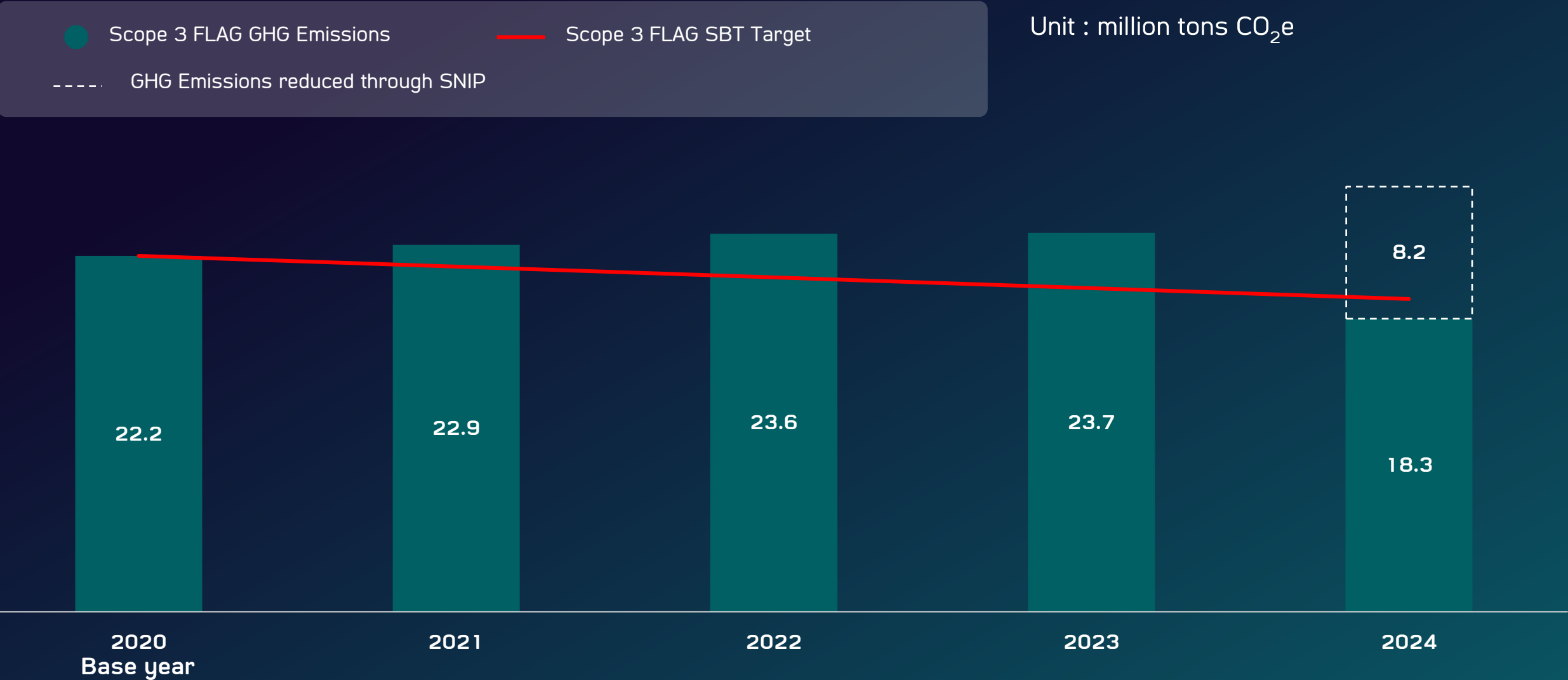
Unit : million tons $CO_2e$

| | Scope 3 Non-FLAG GHG Emissions | Scope 3 Non-FLAG SBT Target |
|---|---|---|



**2020**
**Base year** — 11.5

**2021** — 11.4

**2022** — 13.4

**2023** — 13.8

**2024** — 14.5

*Data collection and calculation methods have been adjusted since 2022 onwards
**The 2024 data will be revised by June 2025

# CPF's Global Scope 3 FLAG GHG Emissions (2020-2024)

- ● Scope 3 FLAG GHG Emissions
- ─── Scope 3 FLAG SBT Target
- ╌╌╌ GHG Emissions reduced through SNIP

Unit : million tons $CO_2e$



|  | 8.2 |
| 22.2 | 22.9 | 23.6 | 23.7 | 18.3 |
| **2020** | **2021** | **2022** | **2023** | **2024** |
| **Base year** | | | | |

*Data collection and calculation methods have been adjusted since 2022 onwards

**The 2024 data will be revised by June 2025

# Glossary

| Term | Details | References |
|------|---------|-----------|
| **Artificial Intelligence (AI)** | • Artificial Intelligence (AI) is the science and engineering of making intelligent machines, especially intelligent computer programs. AI algorithms seek to create expert systems which make predictions or classifications based on input data. | IBM |
| **Augmented Reality/Virtual Reality (AR/VR)** | • Immersive technologies that blur the lines between the physical and digital worlds. They offer unique experiences by overlaying digital elements onto the real world or transporting users into entirely computer-generated environments. | IEEE |
| **BAU** | • Business as usual (BAU) refers to the usual operations of a business | |
| **Blockchain**          CPF | • Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network. The traceability system with Blockchain Traceability technology is widely accepted in numerous industries including banking, sourcing and procurement, and supply chain. | CPF |
| **Building Information Modeling (BIM)** | • Building Information Modeling (BIM) involves the creation and management of data for constructing buildings. Through the BIM platform, structural data is integrated to create intelligent models that represent information throughout the building's lifecycle, from planning and design to construction and operation. | Autodesk |
| **Digital Twin** | • A digital twin is a virtual simulation designed to accurately reflect the physical structure, with real-time data updates. It simulates machine learning processes and provides reasoning to assist in making informed decisions. | IBM |
| **Electric vehicle (EV)** | • Electric vehicle (EV) has an electric motor instead of an internal combustion engine. | U.S. Department of Energy |
| **Environmental Management (EM)** | • A cloud solution with integrated waste management, a flexible and auditable emissions calculator, and real-time analytical tools for ESG reporting. | SAP |

| Term | Details | References |
|---|---|---|
| **EU CBAM** | • A carbon tariff on certain carbon-intensive goods imported into the European Union. It aims to prevent carbon leakage and ensure a level playing field for EU producers by ensuring that imported products face a similar carbon price as those produced domestically. | European Commission |
| **FLAG** | • Forest, Land and Agriculture (FLAG) is the world's first standard method for companies in land-intensive sectors to set science-based targets that include land-based emission reductions and removals | SBTi |
| **GHG** | • Greenhouse gas (GHG) based on the corporate standard, Greenhouse Gas Protocol, covers the accounting and reporting of seven greenhouse gases that are carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PCFs), sulphur hexafluoride ($SF_6$) and nitrogen trifluoride ($NF_3$). | Greenhouse Gas Protocol |
| **Global Reporting Initiative (GRI)** | • Global Reporting Initiative is a global leader for sustainability reporting standards (GRI). | GRI |
| **Long-term** | • Long term targets cover more than 10 years from the date of submission. CPF committed the long-term targets by 2050. | SBTi |
| **Manufacturing Execution System (MES)** | • Tracks and controls production processes, optimizing efficiency and data-driven decision-making. It is essential for regulated industries ensuring compliance, traceability, and product recall capability. | SAP |
| **Near-term** | • Near-term targets must cover a minimum of 5 years and a maximum of 10 years from the date the target is submitted to the SBTi for validation. Since CPF submitted the base year of 2020, our near-term targets are by 2030. | SBTi |
| **Non-FLAG** | • "Non-FLAG" target covers all of the company's other fossil-based emissions | South Pole |

| คำย่อ | รายละเอียด | แหล่งข้อมูลอ้างอิง |
|---|---|---|
| **RE100** | • The use of 100% electricity from renewable energy sources. | CLIMATE GROUP RE100 |
| **Refuse Derived Fuel (RDF)** | • A type of fuel obtained by modifying both the chemical and physical properties of waste materials. | Willshee's |
| **Renewable Energy Certificate (REC)** | • A certificate that represents the generation of 1 megawatt-hour of clean energy. | The International REC Standard |
| **SAP Analytics Cloud (SAC)** | • Combines AI-driven insights, mission-critical analytics, and unified planning to automate reporting, enhance decision-making, and integrate financial, supply chain, and operational planning. | SAP |
| **SBT** | • Science Based Targets | |
| **SBTi** | • The Science Based Targets initiative (SBTi) drives ambitious climate action in the private sector<br>• by enabling organizations to set science-based emissions reduction targets | SBTi |
| **Sustainability Footprint Management (SFM)** | • Utilize an ERP-centric cloud solution to measure, manage, and integrate detailed carbon footprint insights into business processes, ensuring transparency and efficiency. | SAP |
| **Sustainability Control Tower (SCT)** | • Capture actual ESG data, report audit-ready metrics, and act on goals with insights, forecasts, and planning embedded in business processes. | SAP |
| **TGO** | • Thailand Greenhouse Gas Management Organization | TGO |
| **The Internet of Things (IoT)** | • The Internet of Things (IoT) refers to a network of physical devices, vehicles, appliances and other physical objects that allows them to collect and share data. | IBM |