

# OPPO Climate Action Report

Climate Pledges and Low Carbon  
Development Strategy

oppo

# **OPPO Climate Action Report on Climate Pledges and Low Carbon Development Strategy**

**Technical Support Provided by Deloitte**

February 2023

Deloitte provided technical support to OPPO when it developed its GHG emission inventory, emission reduction goals and building its long-term roadmap for low-carbon development.

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# Letter from the CEO

## Pursue Sustainable Development in a Green and Low-Carbon Way

Recent years have seen growing concerns about climate change. The heat waves that have been attacking many countries in the Northern Hemisphere this summer serve to remind us of the urgent need to act. Since 2020, the Company has been embracing a carbon-conscious approach to its business decisions and incorporating the principle of "low-carbon development" into its operations. In 2022, the Company achieved the compilation of a greenhouse gas emission inventory that covers its global operations and has been taking steps to reduce its carbon footprint in areas where there is potential to do so. This OPPO Climate Action Report on Climate Pledges and Low Carbon Development Strategy is a preliminary result of these explorations.

This report presents the Company's climate goal of achieving carbon peak by 2024 and carbon neutrality by 2050 in its operations. With our brand mission "Technology for Mankind and Kindness for the World" guiding our efforts, we are committed to investing in scientific and technological innovation while striving to reach our carbon neutrality goals. It is going to take determination and patience to achieve these goals, but we are steadfast in our commitment.

The OPPO Climate Action Report on Climate Pledges and Low Carbon Development Strategy outlines our long-term objectives for low-carbon development. In the near term, the Company will endeavor to reduce carbon emissions in product design, production, office operations, and travel through energy conservation and technological transformation, as well as the extensive use of renewable energy. Additionally, OPPO will aim to create a green value chain, and design environment-friendly products with upstream and downstream partners of the value chain to facilitate our low-carbon transformation strategy. In the medium to long-term, the Company will investigate the combination of digital technology and traditional industries, persistently improving the intelligent monitoring systems such as the "carbon bill" applied in factories and data centers and integrating element resources in order to effectively balance supply and demand.

We at OPPO are dedicated to creating a better world and providing an enjoyable smart life experience for our global customers through improved products and cutting-edge technology. This journey requires patience, and we are taking it one step at a time.

This OPPO Climate Action Report on Climate Pledges and Low Carbon Development Strategy represents the Company's first step, and we look forward to working with more partners to make further progress and achieve our goals.

Tony Chen  
Founder and CEO of OPPO  
February 2023



# Executive Summary

The Company declared the brand mission of “Technology for Mankind, Kindness for the World” in 2020 that it would strive to create an eco-friendly value chain, in order to meet the goals of the Paris Agreement on climate change, as well as to promote sustainability in the ICT industry and society.

This report is the first time the Company has revealed its total global carbon emissions, and it outlines its committed carbon reduction goals, as well as its accomplishments in low carbon development and its long-term plan for carbon reduction.

## OPPO Greenhouse Gas Inventory

In 2022, the Company finished the creation of its corporate greenhouse gas inventory. In 2021, the Company's global operations generated 299,279.23 tons of CO<sub>2</sub>e, with scope I and scope II making up 3.08% and 96.92% respectively. The year of 2021 is thought to be the starting point for the Company's low-carbon development plan.

## OPPO Low Carbon Development Goals

The Company promises to reach the peak of its carbon emissions by 2024 and become carbon neutral by 2050 in line with its mission to use technology for the benefit of humanity and promote kindness around the world.

## OPPO Low-Carbon Development Progress

The Company has devoted itself to cutting down greenhouse gas emissions from industrial parks, office buildings and data centers, through measures such as addressing the sources of pollution, switching to different energy sources, conserving energy, and optimizing efficiency. By the end of 2022, the Company has managed to reduce 6,000 tons of greenhouse gas emissions from its operations each year through energy saving activities and energy efficiency initiatives.

## OPPO Low Carbon Development Strategy and Roadmap

The Company will strive to reduce its carbon emission by setting long-term goals. This includes improving their manufacturing process to be more low-carbon, minimizing the carbon footprint of their products, investing in low-carbon projects, and utilizing digital carbon management. Additionally, they will partner with organizations to create standards for climate change. Overall, this effort will contribute to a comprehensive low-carbon transition.

# 2021 Greenhouse Gas Emissions



For the year of 2021, the Company's total greenhouse gas emissions from its own operations:

299,279.23  
tCO<sub>2</sub>e

OPPO sets 2021 as the base year of its greenhouse gas emission inventory

Global factories

62.0%

Data centers

31.9%

Office buildings

6.1%

# Scope 1 and Scope 2 Emissions

For the first time in 2022, the Company began to disclose its global greenhouse gas emissions. The precise and thorough information will help to devise a scientific plan for reducing carbon output. The data was verified by CEPREI Certification Body, a certification authority located in Guangzhou.

## Organizational Boundary

In accordance with ISO 14064-1:2018 and the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard issued by the World Resources Institute and World Business Council for Sustainable Development, the Company followed the *Operational Control Approach*<sup>1</sup> and conducted the greenhouse gas accounting of its business operations. This included 11 factories/warehouses, 21 office buildings, and 9 data centers located in China, India, Indonesia, Bangladesh, Turkey and other countries and regions.

## Overview

For the year of 2021 (from January 1, 2021, to December 31, 2021), the Company's total greenhouse gas emissions from its own operations amounted to 299,279.23 tons of CO<sub>2</sub>e. Direct emissions from sources under the Company's control (Scope I) accounted for 9,215.42 tons, while emissions from purchased power and heating power (Scope II) accounted for 290,063.81 tons. Both Scope I and Scope II emissions made up 3.08% and 96.92% of the total, respectively.

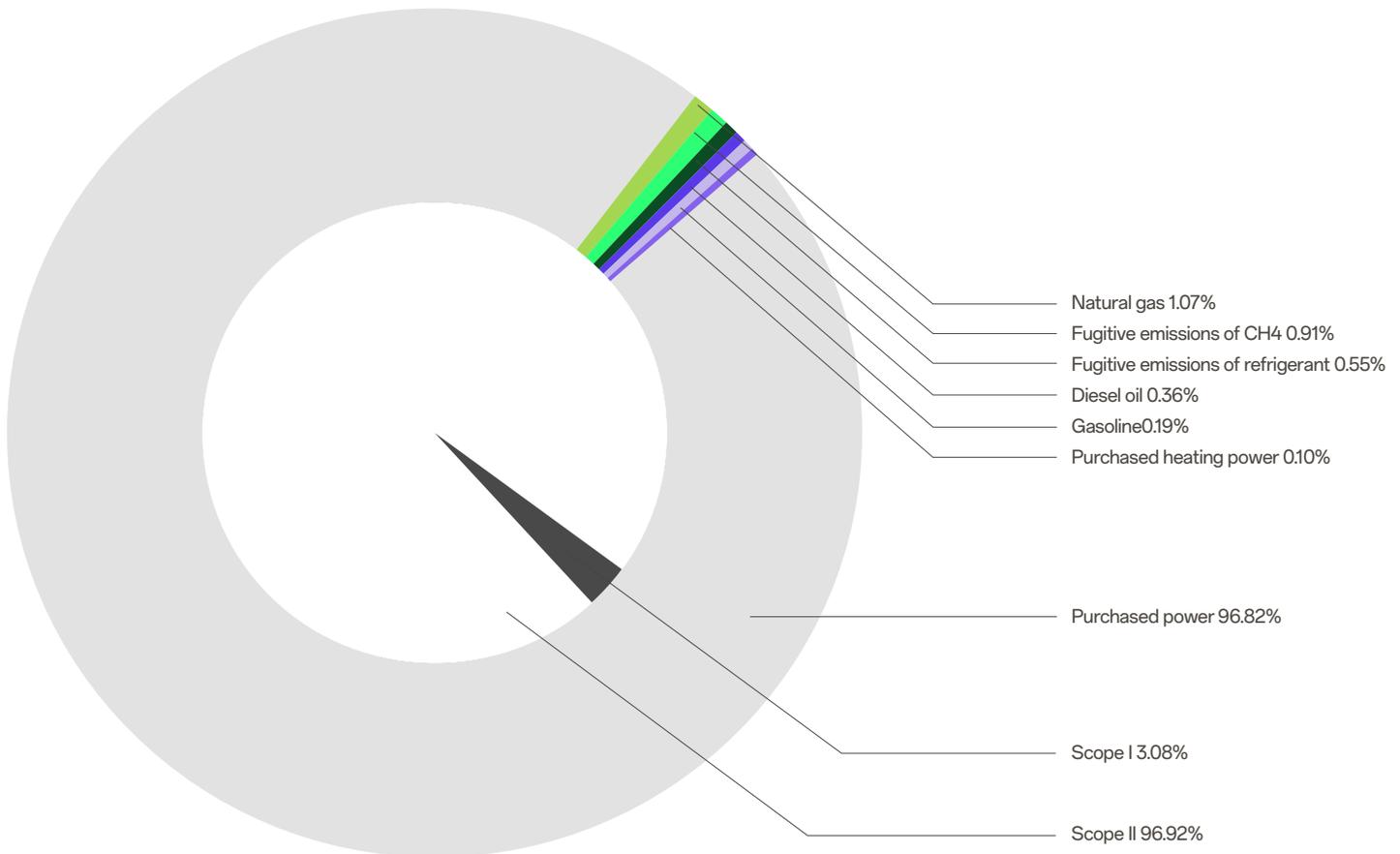


Figure 1: The proportion of the Company's greenhouse gas emission source in Scope I and II in 2021

1. According to the Operation Control Approach, operation control refers to an organization or its subsidiaries have full rights to introduce and implement its operational policies at the operational level.

# Breaking down of Carbon Emissions by Business Units

The Company's factories were the biggest contributor to global emissions, making up 62.0% of the total. Data centers represented the second-highest amount, at 31.9%, while office buildings had the lowest, at 6.1%.

## Greenhouse emission intensity

Global factories	Carbon emission intensity per unit area: 122.9kgCO <sub>2</sub> e/m <sup>2</sup>
Data centers	Carbon emission intensity per unit area: 0.7 tCO <sub>2</sub> e/m <sup>2</sup>
Office buildings	Carbon emission intensity per unit area: 69 kg CO <sub>2</sub> e/m <sup>2</sup> Per capita carbon emission intensity: per capita 0.9 tCO <sub>2</sub> e

## Total greenhouse gas emissions, 10000 tons of CO<sub>2</sub>e

Global factories	18.6
Data centers	9.5
Office buildings	1.8

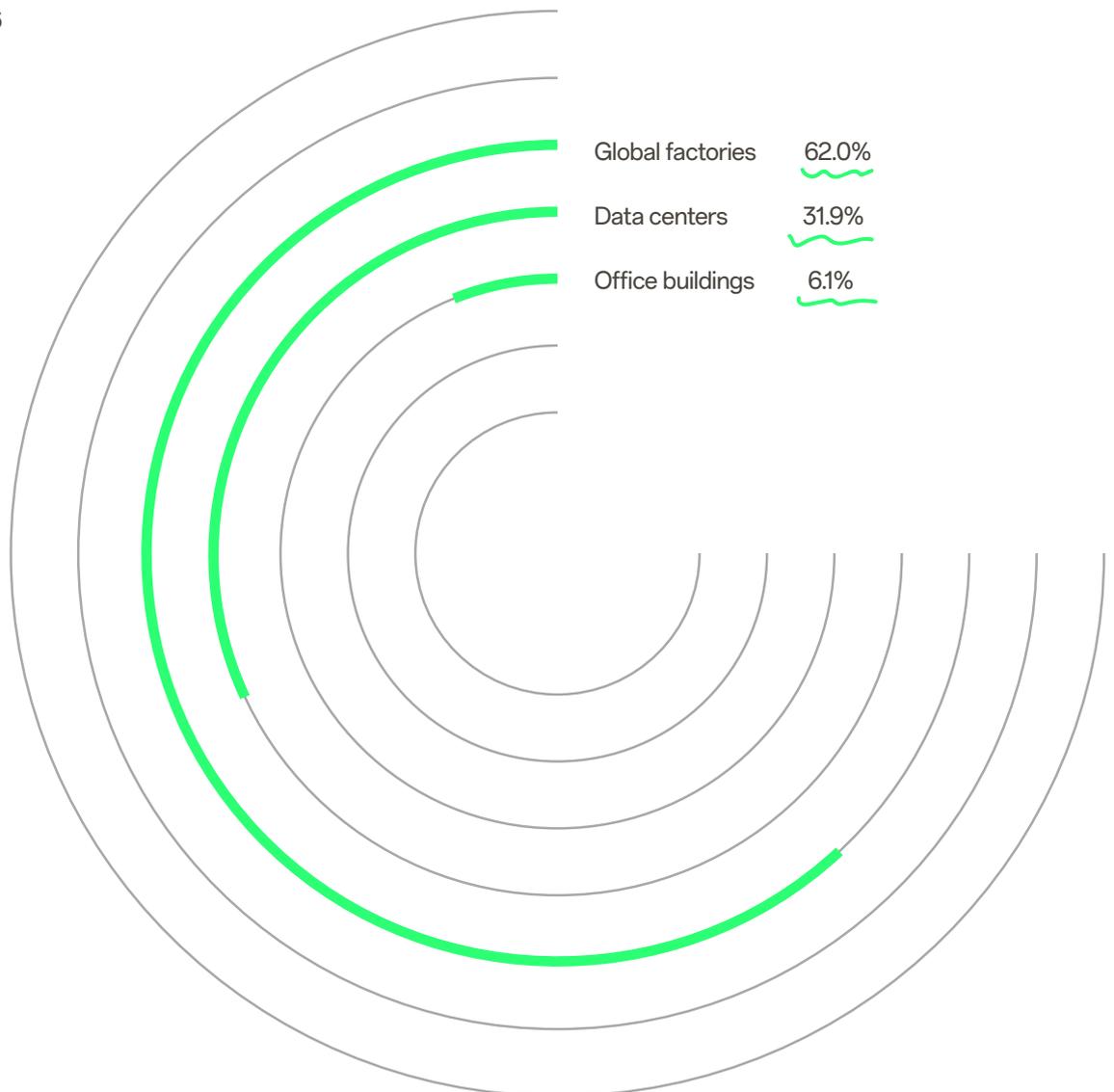


Figure 2: Proportion of greenhouse gas emissions from different business units in the Company in 2021

# Scope 3 Greenhouse Gas Emission Accounting

Analysis of the carbon emissions of 500 enterprises accredited by the S&P has been conducted by CDP, a global environmental impact disclosure NGO. The study showed that certain industries can produce multiple times of indirect greenhouse gas emissions from upstream and downstream value chains (Scope III). For instance, Scope III emissions in the telecommunication service industry and information technology industry account for 93% and 86% respectively. The Company is aware of the importance of reducing value chain emissions to help the industry and society achieve carbon neutrality. In 2022, the Company is taking the initiative to start accounting for Scope III emissions, by identifying key emission types, determining accounting methodologies, and collecting activity data. These preparations will help the Company to formally implement a comprehensive accounting of Scope III emissions next year.

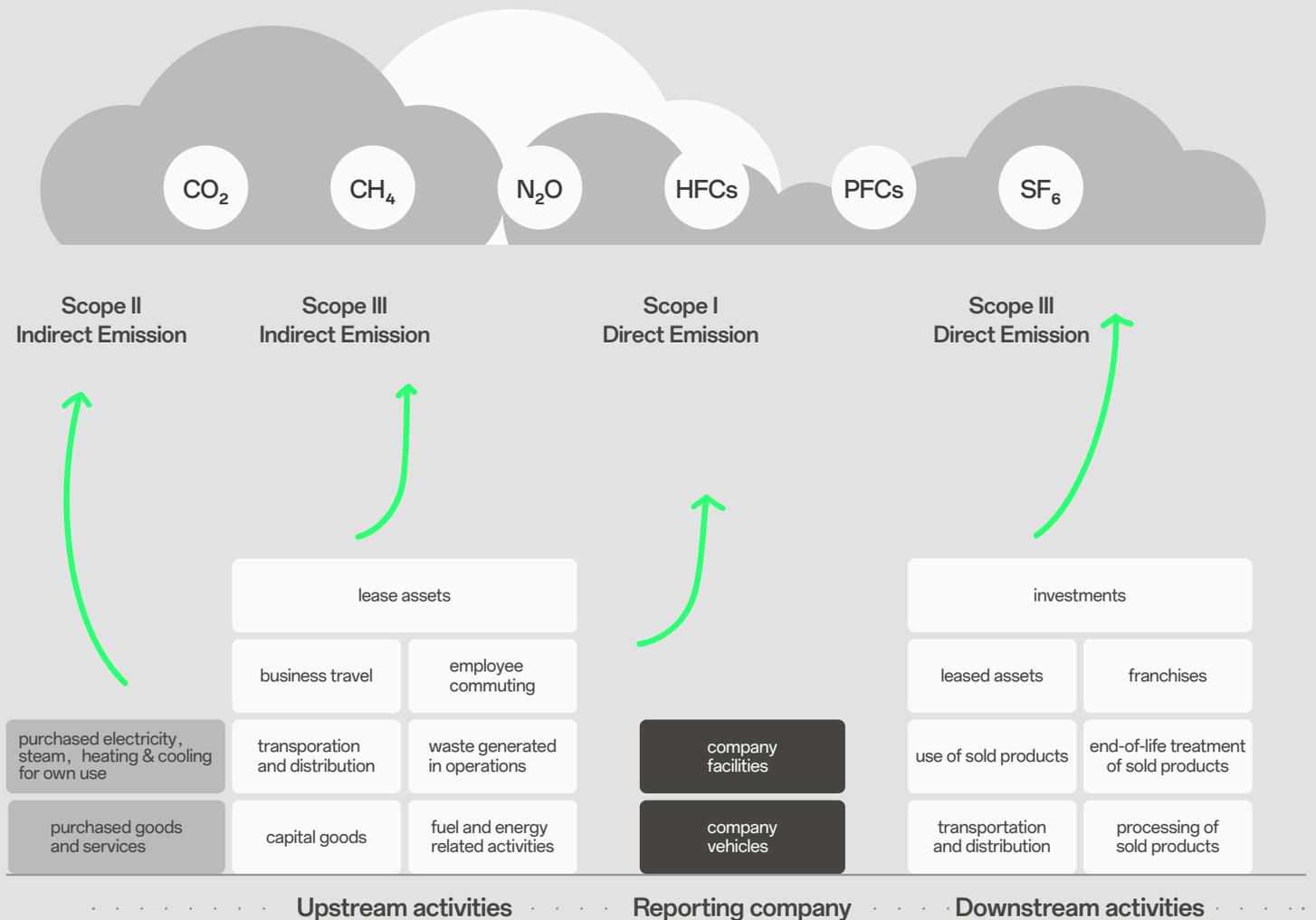


Figure 3: Overview of corporate value chain emissions (Source: GHG Protocol)

The Company is committed to enhancing the accounting approaches and utilizing primary data, as well as adding more categories of greenhouse gases and increasing the number of categories each year. This will ensure that the accounting and reporting of greenhouse gas emissions from Scope III sources is relevant, comprehensive, consistent, transparent, and accurate.

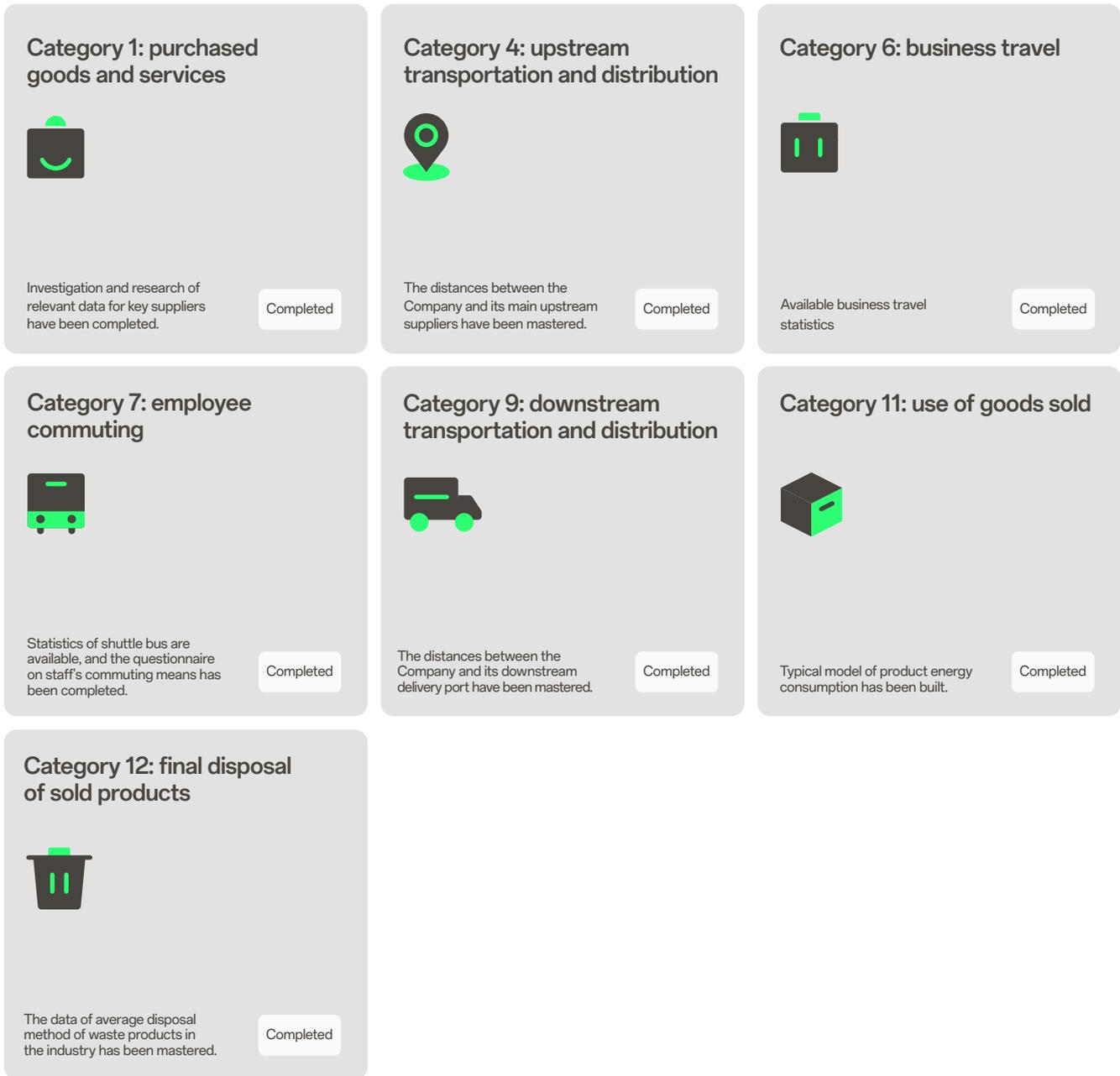


Figure 4: Progress on accounting of emission sources in Scope III

# Low-Carbon Development Commitments and Goals



By 2024  
Carbon Peak  
in its operation

By 2050  
Carbon Neutral  
in its operation

# Low-Carbon Development Commitments and Goals

The Company provides technology solutions to clients around the world, combining hardware, software, and services. As we move towards carbon neutrality, the Company is dedicated to doing its part as a global corporate citizen. Low-carbon development is an important part of the Company’s strategy for environmental conservation, social responsibility, and governance (ESG). Long-term, scientifically-sound, and ambitious goals will be set to guide the Company to reduce carbon emissions in its operations and value chain in an organized and efficient way, while improving the climate resilience of businesses and industries and leading them to sustainable growth.

In view of this, the Company will make the following commitments as to low-carbon development:

## OPPO commits to achieving carbon peak in its operation by 2024

The Company, a technology enterprise with operations in over 60 countries and regions, continues to optimize its low-carbon development strategy. In response to international climate related policies, such as the United Nations Framework Convention on Climate Change and the Paris Agreement, and China’s climate goals, the Company has established a goal to reach peak carbon emissions in its operations by 2024, making efforts to limit its GHG emissions to contribute to China’s carbon reduction goals<sup>2</sup> and the 1.5 degree goal of the Paris Agreement<sup>3</sup>.

## OPPO commits to achieving carbon neutrality in its operation by 2050

The Company commits to achieving carbon neutrality in its operation by 2050, primarily by utilizing energy conservation, engaging in domestic green power trading, procuring international green certificates, and investing in carbon offsets and carbon elimination quotas to reduce its carbon footprint. This approach is in keeping with the mitigation hierarchy recommended by the climate space, and is consistent with the SBTi (Science-Based Targets Initiative) and PAS2060’s climate science. Direct emission reduction is prioritized over carbon removal and offsets.

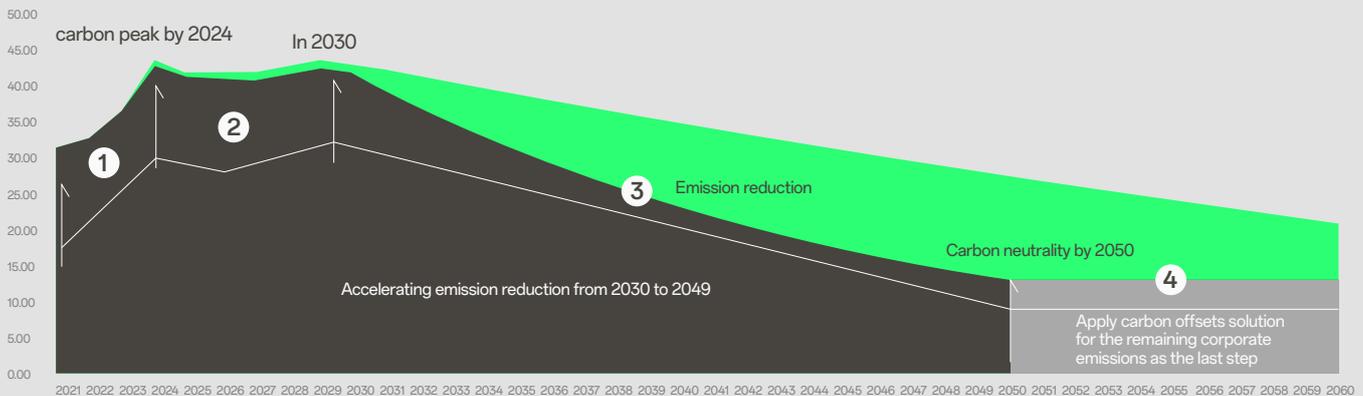


Figure 5: the path to achieving carbon neutrality

<sup>2</sup> In 2020, at the General Debate of the 75<sup>th</sup> Session of The United Nations General Assembly, China announced to have carbon emissions peak before 2030 and to achieve carbon neutrality before 2060.

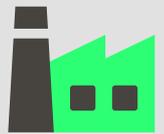
<sup>3</sup>The Paris Agreement is a legally binding international treaty on climate change. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

# Progress on Low-Carbon Development

By the end of 2022, the Company has managed to reduce greenhouse gas emissions from its operations each year

6,000 tCO<sub>2</sub>e

Green Manufacturing



Green Product Design



Green Data Centre



Since 2020, the Company has been devoted to cutting down greenhouse gas discharge from factories, offices and data centers through optimizing resource utilization, clean energy substitution, energy conservation and efficiency improvement, along with reusing. In addition, environmental protection and sustainability have been included in product lifecycle administration to minimize the carbon footprint throughout the entire product lifecycle, beginning with acquiring raw materials and concluding at the end of the product's life. By the end of 2022, the Company has managed to reduce 6,000 tons of greenhouse gas emissions from its operations each year through energy saving activities and energy efficiency initiatives.

# Reducing Carbon Emissions at Worksites

Since 2020, the Company has been making energy-saving changes to key energy consuming machines in the factory, including key production machines, air compressors, cooling systems, and lighting. The company is also exploring to reduce carbon emissions by innovating processes. In 2022, the Company began to look into the possibility of putting in a photovoltaic generation system at worksites to boost the use of clean energy.

## Energy Efficiency

### Energy-saving transformation of equipment through automation introduction

The Company has identified key components of the production process and increased the amount of automation in order to reduce energy usage in the operation of its equipment. As an example, the Company has implemented automation to the corner cutting machines, leading to a 54% decrease in power consumption.

Reduce the power consumption using the auto corner cutting machines

**54%**

### Adopting enclosed hot water supply system in the dormitory

A heat pump, a variable speed water supply pump and an enclosed water storage tank make up an enclosed hot water supply system that has been in use since the Company's dormitories were reconstructed. This type of heat pump is more efficient than traditional ones since it uses a large temperature difference to produce hot water. Its host control is designed to function in both summer and winter modes, resulting in 25% less energy consumption per ton of hot water. The three sets of closed hot water supply systems that are currently in service are estimated to save 108,000 kWh of electricity and reduce 56.9 tons of CO2e annually.

Reduce the energy consumption per ton of hot water:

**25%**

Reduce the annual power consumption by

**108,000 kWh**

Reduce the annual CO2 emission by

**56.9 tCO2e**



### Efficient centralized compressed air station project

At OPPO Dongguan Industrial Park, a state-of-the-art energy efficient centralized compressed air station has been installed. The station consists of a centrifugal, oil-free machine; a frequency conversion, oil-free screw unit; a constant frequency, oil-free screw unit; and a zero gas consumption, heat-recovering dryer. It is equipped with a control logic that has three operation modes: centrifuge frequency conversion, oil-free screw unit; centrifuge; and oil-free screw unit. This system has the potential to significantly reduce power consumption by up to 2.8 million kWh and CO2e discharge by 1,476 tons annually compared to the traditional compressed air station.

### Efficient lighting project in workshops of factories

The Company will be upgrading the lighting system in its workshops to increase energy efficiency. The project will be initiated in the Dongguan and Chongqing Industrial Parks, where 42,000 18W LED tubes will be replaced with more energy-efficient 12W LED tubes. Using an ECM (Energy Contract Management) approach, 2,000 lamps are planned to be upgraded by the end of 2022, with the remaining lamps to follow by 2023. This project is estimated to reduce the annual power consumption of the parks by 2.02 million kWh and CO2e emissions by 1,171 tons.

### Efficient refrigeration station project

The refrigeration station at the factory, office area, data center and other cooling load areas is responsible for keeping these areas at the desired temperature. To enhance the energy efficiency of the station, the Company has commenced upgrades to F1, F2 and F3 refrigeration stations in Area B, Binhai Bay in 2022. This plan involves utilizing high-efficiency equipment such as efficient machine rooms, centrifuges, large-temperature-difference cooling towers, efficient centrifugal pumps, as well as improving the pipelines and installing a smart control system. The project is estimated to be finished by the first half of 2023, resulting in an EER of 5.1 or higher. This will lead to an annual savings of 1.03 million kWh of electricity and 1.5 million Yuan in energy costs, as well as a reduction of 598 tons of CO2e.

Reduce the annual power consumption by

**2.8 million kWh**

Reduce the annual CO2 emission by

**1,476 tCO2e**

Reduce the annual power consumption by

**2.02 million kWh**

Reduce the annual CO2 emission by

**1,171 tCO2e**

Reduce the annual power consumption by

**1.03 million kWh**

Reduce the annual CO2 emission by

**598 tCO2e**

## Renewable Energy

### Photovoltaic (PV) power generation project

The Company is devoted to researching and widely transitioning to renewable energy sources. For example, the Company intends to install rooftop solar panels on 5 factory buildings and 11 dormitory buildings in the Dongguan Industrial Park. After conducting market research and examining suppliers during the first half of 2022, construction of the project has commenced in September 2022 as planned. The first phase of the solar panel project is anticipated to be concluded during the first half of 2023, with an estimated output of 5 million kWh yearly. The energy produced by this project will be utilized for production in the Company's own industrial parks. It is estimated that this project will reduce CO<sub>2</sub>e emissions by 2,905 tons every year and reduce energy expenses by around 500,000 RMB annually.



Achieve annual power output

**5 million kWh**

Reduce the annual CO<sub>2</sub> emission by

**2,905 tCO<sub>2</sub>e**

## Low-Carbon Industrial Park

### Binhai Bay Industrial Park Project

According to the Company's plan for reducing carbon emissions and meeting its climate commitment, it is introducing its first carbon-neutral industrial park at Binhai Bay, Dongguan, China. This ambitious undertaking demonstrates its commitment to sustainable development in the industry. Through redeveloping and renovating its buildings, energy infrastructures, transportation, and other aspects, the project is expected to bring both operational and energy cost savings to the Company by 2022.

Through the carbon neutral development of the Binhai Bay Industrial Park, The Company will be among the world's foremost technology enterprises in the practice of "carbon neutrality". The planning and design of the park took into consideration both its sustainability and size. To create an overall energy system without any fossil fuel, the Company will focus on features such as low-carbon buildings, energy, transportation, communities, and green carbon fixation. The smart industrial park technology will be utilized in order to ensure that the overall planning of carbon neutrality is achieved.

A comprehensive and sustainable strategy has been implemented for the project and is expected to reduce energy usage and carbon by 38%, with 15% being saved due to the use of solar PV. The park will look to purchase green power in the future to achieve carbon neutrality. This plan is predicted to save the company approximately 145 million RMB in operation, maintenance, and energy costs, as well as 180,000 tons of CO<sub>2</sub>e every year. The Company Ring and Exhibition Hall, the enterprise landmark buildings, are striving to reach net zero carbon, meaning all of their energy needs will be met through on-site solar energy and the buildings will apply for internationally recognized low-carbon certification for their energy conservation.

Reduce energy usage and carbon by

**38%**

Reduce the annual CO<sub>2</sub> emission by

**180,000 tCO<sub>2</sub>e**

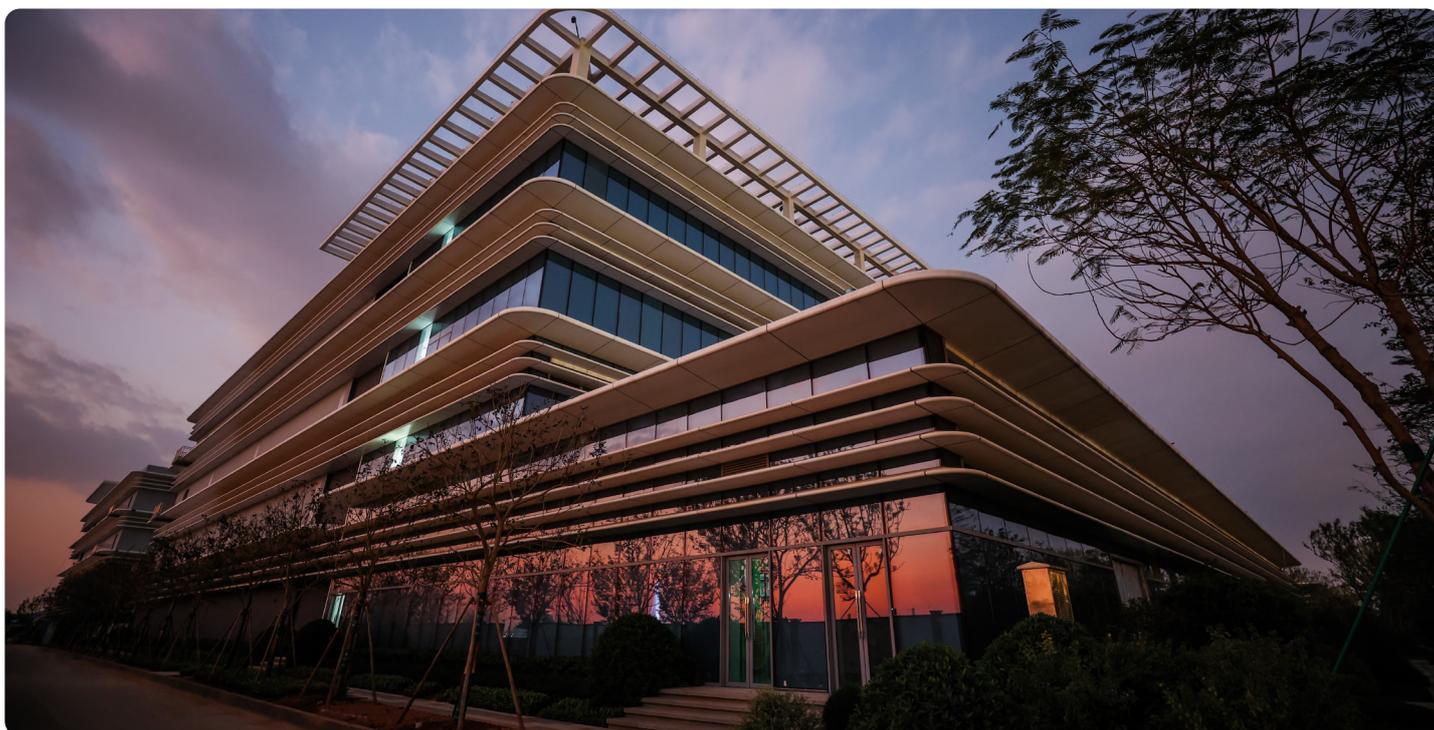
## Zero-carbon buildings, Binhai Bay Industrial Park

The Company is testing energy-saving and carbon emission reduction technologies in the Zone B R&D building and canteen with the goal of making them completely carbon-free. They are using passive and active building energy-saving approaches, optimizing their energy systems, and utilizing digital technology such as smart buildings for maximum energy efficiency and reduced energy usage. The thermal performance of the building's enclosure structure can be increased by 25% from the current energy saving standards by improving external shading and glass with a depth of 2,000mm. To reduce solar radiation heat, the Company is installing high reflective pavement materials, green roofs, and solar PV panels with a solar radiation reflection coefficient of at least 0.4, covering an area more than 75% of the roof.

When selecting water chillers, the use of frequency conversion centrifugal chillers and frequency conversion centrifugal magnetic levitation chillers can increase the COP energy efficiency level of the chillers by 12% from their current specifications. Additionally, the energy efficiency of the circulating water pump of the air conditioning cold and hot water system, and the power of the fan of the ventilating and air-conditioning system with an air volume greater than 10,000 m<sup>3</sup>/h, will be 20% lower than the national standard. Moreover, efficient LED lamps will be used, and the lighting power density of the designed main functional rooms will not exceed 70% of the target value specified in GB50034-2013 Standard for Lighting Design of Buildings. Lastly, efficient energy-saving transformers rated as secondary energy efficiency will be adopted, and energy-saving measures such as elevator control group, drive through variable-frequency speed regulation, escalator induction start and stop and variable frequency, automatic light off for unmanned cabin, and driver dormancy will be implemented to save over 20% of energy consumed in buildings.

The Company will be looking into ways of incorporating PV technology into buildings in order to increase the usage of renewable energy. They plan to install PV on the R&D building, which will be able to provide 4% of the building's yearly power needs. PV on this building will also help it achieve a power saving rate of over 60% for near zero energy consumption buildings, and over 50% for canteen buildings. The Company is aiming for a good balance between the aesthetic and functional aspects of the architecture.

Zone B of Binhai Bay's energy management system is being incorporated into the Global Smart Command Center in the park. This will allow the energy of the cold and heat sources, transmission and distribution systems, electricity, and other equipment of a single building to be monitored separately, and the data will be sent to the Command Center. The IoT of the Command Center will enable the Company to compare year-on-year and month-on-month data, identify problems and failures, and modify the operation management strategy. The completion of the low carbon building transformation project in Zone B will significantly contribute to the park's goal of achieving carbon neutrality.



OPPO Binhai Bay Data Center

# Operating Highly Efficient Data Centers

## Work with service providers to promote energy saving transformation of the data center

The Company is encouraging service providers of leased data centers to implement energy-saving procedures, such as improving the cold source control system to make the refrigerative air conditioner more efficient, increasing the temperature of the water supply and return, adding insulation to the cold and hot channels of the blind plate cabinets, switching out fluorescent lamps for energy-saving LED lights, and using waste heat for office heating. This would result in an annual reduction of 8.54 million kWh of energy consumption and 4,501 tons of CO<sub>2</sub>e emissions.

## Binhai Bay Low-Carbon Green Data Center

The OPPO Binhai Bay Data Center, the Company's first large-scale facility, includes infrastructure and business innovations to reduce energy and water consumption. These measures include efficient UPS, a medium-temperature cold water system, a magnetic suspension cooler, a plate-type heat exchanger, rainwater recycling to the cooling tower, external wall insulation and humidity isolation. The PUE of the data center is 1.27, significantly lower than the domestic average. Additionally, the Company has implemented new technologies such as liquid cooling servers, optical storage, and GPU clusters to further reduce energy usage from the source. The Uptime TIER III certification has been awarded to the Data Center, and the use of rainwater for cooling towers saves about 30,000 tons of water annually. In 2021, Building A of the OPPO Binhai Bay Data Center was rated as Innovator of Carbon Neutral Data Center and was given the Low Carbon Assessment Certificate for the Data Center at the Forum of Innovative Green Low Carbon Data Center at the 2021 (12th) China Internet Conference.

The Company has developed an independent carbon emission data platform for cloud resources, which has collected and displayed full carbon emission data from private cloud computer rooms and servers around the world. Data has indicated that so far, tens of thousands of tons of carbon dioxide have been reduced. Additionally, in July, OPPO Cloud Carbon Emission Bill was released and sent to all cloud customers every month. This is part of an all-encompassing effort to create a green intelligent engine.

Reduce the annual power consumption by

**8.54 million kWh**

Reduce the annual CO<sub>2</sub> emission by

**4,501 tCO<sub>2</sub>e**

Uptime TIER III Certification



Annual water savings

**30,000 tons**

The Low Carbon Assessment Certificate for the Data Center

Innovator of Carbon Neutral Data Center

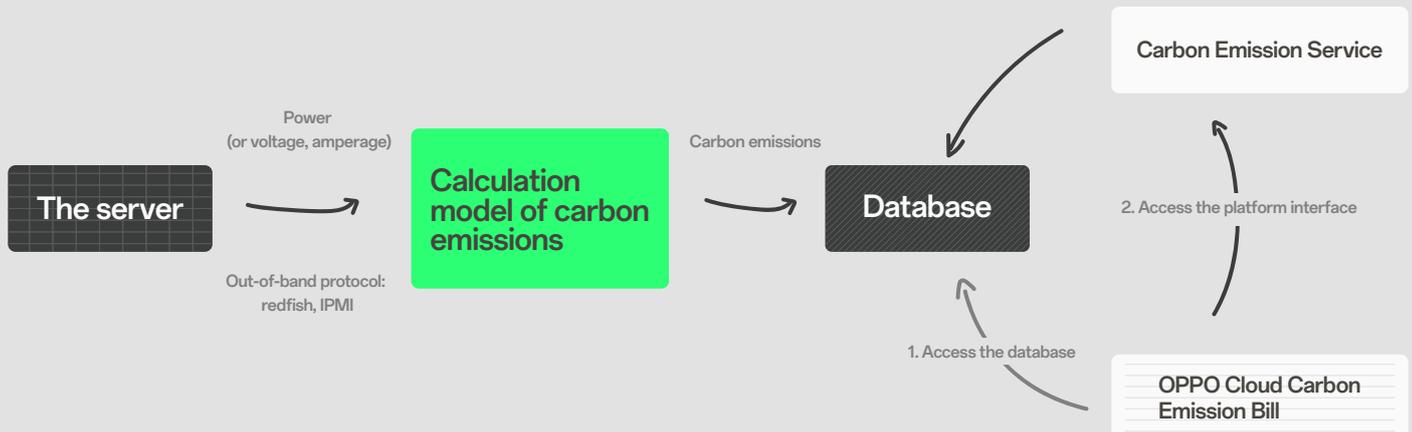


Figure 6: Model of OPPO Cloud Carbon Emission Data Platform

# Designing Low-Carbon Products

## Materials

The Company is taking the idea of a green and low-carbon economy into account when deciding on how to package their products and what materials to use in the products.

The Company is focusing on the "3R+1D" concept of green packaging which involves reducing the amount of packaging, making it easier to recycle, making it more biodegradable and finally, designing it to be more aesthetically pleasing. We are working to create packaging that is more simplified, recyclable and degradable in order to be more eco-friendly.

The Company is devoted to utilizing low-carbon materials and reducing plastic content in our product packaging. To begin with, starting from the European markets in 2023, nearly all plastics are removed from our packaging, making it 100% biodegradable and more eco-friendly. Approximately 45% of recycled fibers, sourced from recycled wastepaper or plant-based materials (such as sugarcane and bamboo residues), is applied to the product packaging. This will help reduce the consumption of raw materials. Additionally, petroleum-based ink used in package printing has been replaced by soy ink in order to diminish environmental pollution and destruction. The Company plans to continue to drive more green packaging initiatives in the future.

## While Using the Products

The self-developed battery health engine is applied to make the products more efficient and long-lasting. This innovation helps the battery to maintain 80% of its initial capacity for up to 1600 recharge cycles.

The Company has opted for a structural modular design which simplifies the process of maintaining products and exchanging components.

Also, the Company offers services to upgrade the systems and software of their products, which can prolong the lifespan and thus reduce the environmental impact of the products.

Besides, the Company concerns a lot on the energy efficiency performance of products. The Life Cycle Assessment (LCA) of the products reveals that the carbon emissions of mobile phones in use account for 16%~18%, mainly from the power consumption of mobile phones during charging. At present, the charging energy efficiency of the Company mobile phones conforms to the U.S. DOE VI (energy efficiency VI), and the integrated energy efficiency of screen, CPU+DDR, modem, audio, and camera has been further improved.

Moreover, the Company offers an intelligent management system to users to increase their energy efficiency. This system has a default feature of an intelligent power conservation protection that turns on the power saving mode when the phone has less than 20% of its battery life left.

## End-of-Life Treatment

The Company offers trade-in services in both domestic and international markets to facilitate the recycling of mobile phones. In 2021, 1.2 million phones were recycled in China, amounting to a total weight of 216 tons. This number increase to 1.3 million phones and 240 tons in 2022. In the EU and other regions, the Company is involved in the Green Dot program to recycle packaging waste, as well as partnering with professional third-party recycling firms. Recycling used products helps to improve the efficiency of resource utilization, reducing the environmental impacts of waste products.

The recycling number of phones in China in 2022

1.3 million sets

Total weight of recycled phones

240 tons

The recycling number of phones in China for 2021

1.2 million sets

Total weight of recycled phones

216 tons

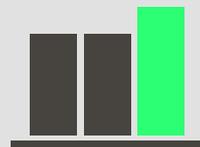


# Long-Term Roadmap for Low-Carbon Development

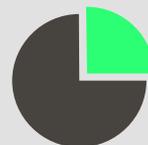
Low-Carbon Manufacturing



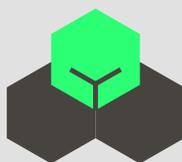
Low Carbon -Based Investment



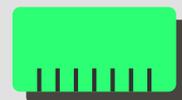
Digital Carbon Management



Reducing Products' Carbon Footprint



Collaboration in the Development of Climate Change Standards



The Company is aiming to reduce carbon in its operations over both short-term and long-term periods. To this end, it will enhance its efforts in producing goods with a lower carbon footprint, investing in options that generate less carbon, utilizing digital technology to manage carbon output, and teaming up to produce standards for dealing with climate change.

# Low-Carbon Manufacturing

The greenhouse gas emission intensity per unit area of the Company's industrial parks worldwide has been reduced to 122.91 kgCO<sub>2</sub>e/m<sup>2</sup>. The Company will continue putting efforts in energy substitution, energy conservation and efficiency enhancement, carbon offset and carbon removal, as well as climate change and corporate governance to decarbonize manufacturing.

## Renewable Energy Transition

The Company has identified increasing the level of electrification and increasing the proportion of renewable energy sources as important strategies for reducing greenhouse gas emissions from sources covered by Scope I and Scope II. To do this, gasoline and diesel vehicles will be replaced with electric vehicles, solar panels will be installed on the plant roof, and green electricity and international green certificates will be purchased to replace other energy sources.

The Company has calculated that their consumption of gasoline and diesel in commercial vehicles will lead to 1,063 tonnes of CO<sub>2</sub>e being emitted in 2021. To cut down on their emissions, they plan to replace these vehicles with electric ones when their service life ends. It is estimated that this replacement will lead to a reduction of 531 tonnes of CO<sub>2</sub>e.

A renewable energy installation strategy has been developed that involves two sites in Dongguan and Binhai Bay, potentially cutting down 28,000 tons of CO<sub>2</sub>e every year. Furthermore, the possibility of establishing solar electric plants in Chongqing Smart Industrial Park is being evaluated, with the potential to reduce the emission of greenhouse gases by approximately 4,000 tons of CO<sub>2</sub>e.

In order to reduce greenhouse gas emissions that result from electricity usage, the purchase of renewable energy has been undertaken. In 2022, with assistance from China Southern Power Grid, more than 2.5 million kWh of renewable energy was purchased for Binhai Bay Data Center. The goal is to raise the procurement rate to ten times the current amount, thus considerably decreasing carbon emissions. Should direct energy reductions or utilization of renewable energy sources be unfeasible, Renewable Energy Credits (REC) and International Renewable Energy Credits (I-REC) will be bought to reduce carbon emissions.

The greenhouse gas emissions from commercial vehicles

1,063 tCO<sub>2</sub>e

Reduce the greenhouse gas emission by the vehicle replacement in 2030

531 tCO<sub>2</sub>e

Reduce the greenhouse gas emission after the completion of the new renewable energy installations plan in Dongguan and Binhaiwan Bay areas

28,000 tCO<sub>2</sub>e

Reduce the greenhouse gas emission after the completion of Chongqing Smart Industrial Park

4000 tCO<sub>2</sub>e

## Energy Conservation and Efficiency Improvement

The Company is looking to reduce their carbon footprint by making use of energy-saving equipment and taking targeted measures to improve energy efficiency and reduce emissions. They currently have a range of energy-consuming devices, such as cooling stations, air compressors and general equipment, as well as reflux furnaces, chip mounters, printing machines, and aging testers used in production.

By 2025, upgrades to the refrigeration station and air compressor are planned in order to make them more energy-efficient. Efficient machinery, cooling towers, and pumps, as well as improved pipelines will be used in order to conserve energy and lower emissions. It is projected that the changes will reduce tCO<sub>2</sub>e emissions by approximately 3,900 and updating the air compressors intelligently at many plants will lower CO<sub>2</sub>e by approximately 2,800t.

To make sure crucial production equipment operates at its best, regular maintenance is essential. To do this, the Company will utilize IoT, AI, and other digital and intelligent technologies to observe and regulate the equipment. Smart meters will be installed on crucial energy-consuming equipment for tracking and controlling its energy usage on an existing energy management platform. A Manufacturing Execution System (MES) will be utilized to connect and interact with all equipment within the enterprise, and to store assets and spare parts for efficient information management, such as counting, maintenance, repair, and usage. To wrap up, a closed-loop management system will be implemented for the entire life cycle of each device, from delivery to scrapping.

### The major energy-consuming devices in factories

<p>Cool Station</p> 	<p>Air Compressor</p> 	<p>Reflux Furnace</p> 	<p>Chip Mounter</p> 	<p>Printing Machine</p> 	<p>Aging Tester</p> 
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## Carbon Offset and Carbon Removal

In order to reach carbon neutrality, the strategy focuses on reducing emissions first, then using carbon removal, and finally offsets. This is in line with global standards for dramatically decreasing greenhouse gas emissions in the atmosphere, alongside the core requirements in the scientific target PAS2060 and other standards. Therefore, the majority of emission reduction credits will be attained from direct reduction activities. Remaining emissions will be balanced out through the utilization of high-quality carbon offset and removal.

In terms of carbon offset, the Company will continue to follow with interest the types of carbon offset recognized in PAS2060, such as CDM, VCS, Gold Standard, and domestic CCER. In terms of carbon removal, the Company will continue to pay attention to ecological carbon sinks. While purchasing carbon sinks, the Company will also take seriously the protection of biodiversity and natural resources, which will also be part of the Company's corporate social responsibility initiatives.

In addition, the Company will continue to pay attention to the development of negative emission technologies and increase attention to carbon capture and storage (CCS) investment opportunities. As CCS technologies becoming more mature, the Company believe they will offer significant strategic value in the Company's transition to carbon neutrality

## Climate Change and Corporate Governance

Decreasing operational carbon emissions and carbon footprints of products, exchanging to more efficient energy, incorporating a low-carbon development strategy across business, and being aware of corporate actions regarding carbon are the five major areas of the Company's corporate-wide carbon management framework. In addition to these 5 areas, the Company has established 16 carbon reduction scenarios which supply our employees with precise guidelines. As the next step, the Company is improving the carbon management mechanism and refining the sub-areas of the carbon management framework to help meet the Company's carbon reduction objectives.

Currently, the Company has created assessment indicators for the production domain with an emphasis on quality assurance and cost control. To directly assess energy consumption and carbon reduction, the Group's overall low-carbon development objectives have been broken down into the production sector. Examples of indicators include energy consumption intensity and carbon emission intensity per unit area, per unit yield, and per unit employee of the factory at present. When it comes to energy consumption monitoring on the equipment level, indicators for unit energy consumption and unit carbon emission intensity at different times, for different product types, and at different production speeds can be implemented for energy consumption and carbon emission management. Lastly, the Company will allocate responsibilities among different departments in the production sector to help reach the goal of low-carbon development.

# Reducing Products' Carbon Footprint

Life Cycle Assessment (LCA) is a method of evaluating the environmental impact of products and has recently been receiving much global attention. It is considered the best approach to quantitatively analyze the environmental effects of products and accurately displays the resources, energy use, and emissions throughout the product's life cycle.

By December 2022, the Company has conducted a carbon footprint assessment of 68 typical mobile phones, covering the entire life cycle of the product. Based on the assessment results, the Company has tailored plans to reduce the carbon footprint of cell phones, taking into account their own circumstances, such as developing innovative raw materials and components, eliminating or reducing plastic packaging, introducing green production, improving energy efficiency, extending product life, and offering full-brand recycling.

Analysis of the carbon footprint of mobile phones reveals that more than 70% of greenhouse gas emissions come from the procurement of raw materials and the supply chain. Therefore, our focus is to reduce the environmental impact of these products by designing low-carbon products and working with our suppliers to implement low-carbon management.

First, the Company will choose low-carbon raw materials. The Company's newly developed high refractive index coating materials and high-strength PEEK materials can make up for existing material defects, simplifying the processes of processing, production and assembly, cutting down energy consumption and greenhouse gas emissions during production, and reducing production costs. Additionally, the Company intends to raise the proportion of recycled metals in the parts of mobile phones, containing various metals with a recycling value, such as gold, silver, tin, indium, cobalt, and other metals.

Secondly, the Company will continue to promote plastic reduction and removal of product packaging. Beginning in Europe, by 2023, the use of plastic in packaging for mobile phones will be completely eliminated. The Company is dedicated to further reducing plastic packaging in other markets and to continue to promote green packaging initiatives in the future, reducing packaging and utilizing new biodegradable materials.

Thirdly, the Company will encourage suppliers to promote emission reduction in their own workplaces, by utilizing energy-saving technology, procuring green power and employing other methods, we are committed to reducing the greenhouse gas emissions and minimizing the carbon footprint of our products throughout the supply and acquisition of raw materials.

Finally, the Company will explore the green disassembly process of scrapped products and promote the recycling of raw materials. The Company plans to collaborate with a downstream product disassembly organization in order to improve the methods of disassembly and recycling of raw materials. We shall quantify the "carbon footprint" associated with waste disposal. By recycling the materials found in discarded mobile phones, the carbon footprint associated with waste product disposal will become negative. Even if the recycled materials do not return to the mobile phone production value chain, the environmental benefits of this measure to society as a whole can still be quantified through the "carbon footprint". This can encourage more organizations to dispose of waste products and recycle raw materials in an eco-friendly manner.

## Roadmap to Low-Carbon Products

Use low-carbon raw materials

Reduce the use of plastic materials in product packaging

Encourage suppliers to carry out their own emission reduction actions

Explore the green disassembly process of scrapped products and actively promote the recycling of raw materials

# Low Carbon-Based Investment

The Company plans to evaluate potential investment opportunities based on ESG investment indicators, with a focus on environmental, social, and governance-related issues. This will involve identifying investments which are aligned with the Company's sustainability goals, as well as those which may have a positive impact on the environment and society. The Company will also assess the risks associated with potential investments, including those related to climate change, natural resources, pollution, and waste, human capital, product responsibilities, corporate governance, corporate behavior, and other topics.

Secondly, the Company will gradually implement a sustainable investing system which meets international standards, from the pre-event stage, to the interim stage, to the post event stage. This system will require the Company to consider ESG factors during the investment process, ultimately accomplishing the full process and cycle management of ESG investment products. The Company is committed to inspiring the companies to increase their influence on ESG and make positive impacts on society and nature.

Table 1 ESG Key Issues

	Topics	ESG key issues
<b>Environmental Issues</b>	Climate change	Carbon emissions, product carbon footprint, impact of financial affairs on environment, vulnerability to climate change
	Natural resources	Limitation of water resource, raw material procurement, ecological diversity, and land use
	Pollution and waste	Discharge of hazardous and waste, packaging materials and waste, electronic waste
	Environmental opportunities	Clean energy technology, renewable energy opportunities, green buildings
<b>Social issues</b>	Human capital	Labor management, employee health and safety, human resource development, supply chain human standards
	Product liabilities	Product safety and quality, privacy and data safety, chemical safety, responsible investment, financial product safety, health, and population risk
<b>Corporate Governance</b>	Stakeholder objections	Disputed procurement
	Social opportunities	Communication availability, financial service availability, health security availability, nutrition, and health opportunities
	Governance	Board of directors, ownership, remuneration, financial affairs
	Corporate behaviors	Business ethics, financial transparency, corruption and stability, and financial system stability

# Digital Carbon Management

At the COP27, the World Bank, UNDP, and other international bodies proposed a "Digital for Climate" initiative, emphasizing the need for digital platforms for carbon management in the future. This includes promoting a digital carbon emission monitoring, reporting, and verification (MRV) system.

The Company intends to construct a carbon management platform, utilizing the existing energy management platform. Through this, the Company plans to build a Normalized Carbon Emission Data Monitoring, Reporting and Verifying Mechanism. Additionally, intelligent analysis and dynamic monitoring will be used to enhance the carbon emission monitoring capacity and to pinpoint key emission scenarios. With the help of their emission status and forecast analysis, the Company can make informed decisions on carbon reduction. Moreover, assessment indicators will be accurately quantified, so as to scientifically evaluate the success of carbon emission targets and the performance of each department and business unit.

Following this, the Company will continue to create a supplier carbon management platform and a product carbon footprint management platform, in order to achieve standardized, formalized, and highly-efficient carbon management at the corporate, value-chain, and product levels.

# Collaboration in the Development of Climate Change Standards

Carbon emission accounting is essential for setting and achieving carbon peak and carbon neutrality goals. It provides a foundation for the development of policies, implementation of initiatives, evaluation of progress, negotiation of agreements, and measurement of results.

In August 2022, the National Development and Reform Commission, the National Bureau of Statistics, and the Ministry of Ecological Environment issued the Notice on Accelerating the Establishment of a Unified and Standardized Implementation Plan for the Carbon Emission Accounting System (hereinafter referred to as the Plan). The Plan stimulates universities, research institutes, businesses, and institutions to conduct research on carbon emission methodologies and to strengthen the extended measurement of, for example, the carbon footprint of products in key industries.

Leading enterprises in various industries are vital to the construction and practice of green standards systems. The Company will cooperate with relevant departments and trade associations to assist in the development and implementation of standards against climate change and of measurement systems to meet policy requirements and to uphold its part in the low-carbon development of the industry.

# Conclusion

The global business community is increasingly concerned about the widespread effects of climate change, prompting them to take more responsible steps. In 2015, the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21/CMP11) adopted the Paris Agreement, which proposed to limit the global average temperature increase to less than 2°C above pre-industrial levels and make every effort to keep it below 1.5°C. As a signatory to the Paris Agreement, China has been actively striving to achieve net-zero emissions by 2050. Moreover, at the 75th session of the United Nations General Assembly in 2020, China declared its intention to have CO<sub>2</sub> emissions peak before 2030 and reach carbon neutrality by 2060.

As an active member of UNGC, the Company has developed a low carbon development strategy in line with the Ten Principles and according to global standards and scientific methods. The Company has also set mid- and long-term climate objectives, pledging to reach a carbon peak by 2024 and become carbon neutral by 2050. This is intended to help address climate change through more responsible business practices.

The Company has formulated a carbon reduction roadmap with step-by-step implementation plans to make certain that their medium and long-term climate objectives are achieved and that the business has a smooth transition to low-carbon operations.

In alignment with its mission of "Technology for Mankind, Kindness for the World", the Company is dedicated to establishing a green, low-carbon business model and forming an environment-friendly value chain from manufacture to product research and design, enabled by technological and material innovations. As an international technological enterprise with rapid growth across more than 60 countries and regions, the Company is pushing for improved energy efficiency and cleaner energy utilization in its operations and creating a green value chain that includes "green manufacturing, green data center, and green product design" by working together with its partners in business and industry. Moreover, the Company is committed to "low-carbon manufacturing, reducing products' carbon footprint, low carbon-based investment, digital carbon management and collaboration in the development of climate change standards" and inspiring its supply chain partners to shift to sustainable development, striving towards achieving carbon neutrality for the Company's supply chain and products in the future. Additionally, the Company is actively engaging in ESG investments and exploring ways to reduce climate change risks and mitigate the consequences of adverse climate events.

This Climate Action Report represents a milestone for the Company, but it will never be the end. In the torrent of the third scientific and technological revolution, the Company will firmly seize the opportunities brought by climate change, while avoiding the risks that follow. Harboring the Company's vision, mission and values, the strategic declaration of "All for One, Paramount User Experience", the Company will work with our partners and customers towards an era of integration. The Company pledge to build an open, symbiotic, and prosperous ecology, and help the global economy and human society move towards a more environment-friendly, better, and sustainable development path.

**Technology for Mankind, Kindness for the World.**

# Appendix

## Abbreviations

- tCO<sub>2</sub>e : Ton Carbon Dioxide Equivalence
- PUE : Power Usage Effectiveness
- SBTi : The Science Based Targets initiative
- ISO 14040 : Life Cycle Assessment: Principles and Framework
- ISO 14044 : Environmental Management. Product Life Cycle Assessment. Requirements and Guidelines
- PAS2060 : Specification for Carbon Neutrality Demonstration
- CDM : Clean Development Mechanism
- VCS : Verified Carbon Standard
- Cold Standard
- CCER, Chinese Certified Emission Reduction
- UNFCCC, The United Nations Framework Convention on Climate Change

## Greenhouse Gas Verification

The results of this accounting were audited by CEPREI Certification Body, a certification body in Guangzhou.



## Source of Emission Factors

- The consumption of vehicle gasoline and diesel comes from mobile combustion sources such as official vehicles, and their greenhouse gas emission factors are derived from the default values in Mobile Combustion Table 3.2.1 and Table 3.2.2 of Chapter III of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
- Generator diesel oil is a fixed combustion source, whose greenhouse gas emission factors are derived from Fixed Combustion Table 2.2, Chapter II of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
- Natural gas consumption comes from fixed combustion sources such as stoves, and its greenhouse gas emission factors are derived from Fixed Combustion Table 2.4 of Chapter II of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
- The global warming potential value of refrigerant comes from the Sixth IPCC Assessment Report
- The emission factors of China's power supply are derived from the Guidelines to Power Generation Facilities for Accounting Methods and Reporting of Greenhouse Gas Emissions by Enterprises (Revised in 2022) issued by the Ministry of Ecology and Environment.
- UK electricity supply emission factors come from UKDEFRA, Defra 2022.
- The emission factors of power supply in other countries come from Country Specific Electricity Grid Greenhouse Gas Emission Factors released by Carbon Footprint in March 2022.

Statement

## Declaration

- This report is an elaboration of the Company's goals of carbon neutrality and action plan, which contains uncertain forward-looking statements. The actual results may be different from those stated in the report.
- Deloitte provided technical support to OPPO when it developed its GHG emission inventory, emission reduction goals and building its long-term roadmap for low-carbon development. Accordingly, Deloitte does not assume responsibility towards nor accept liability to any other person for the contents of this Report. All duties and liabilities to any third parties are specifically disclaimed.

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