

Tencent Carbon Neutrality Target and Roadmap Report



CONTENTS

02 | Letter from Tencent's Chairman and CEO

04 | Executive Summary

1 06 | Tencent on Carbon Neutrality

2 08 | Tencent Greenhouse Gas Emissions Footprint, Carbon Neutrality Target, and Carbon Neutrality Roadmap

10 | Tencent's Carbon Neutrality Target

11 | Tencent's Current Greenhouse Gas Emissions

16 | Tencent's Carbon Neutrality Roadmap

3 24 | Helping Our Community Reach "Net Zero"

26 | Leading the public to a low-carbon lifestyle

29 | Helping industries' low-carbon transformation

32 | Promoting sustainable social value innovation

4 36 | Transparent Action, Open Cooperation

38 | Transparent Action

38 | Open Cooperation

40 | Epilogue

41 | Appendix

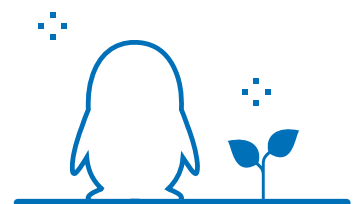
Letter from Tencent's Chairman and CEO

Starting From Here

At the start of 2021, we announced the creation of our carbon neutrality plan. Over the past year, we have meticulously examined our greenhouse gas emissions, explored measures to achieve carbon neutrality, and considered how to utilize our strengths to address the urgent challenge of climate change. The publication of the Tencent Carbon Neutrality Target and Roadmap Report is the result of that work. It lays the foundation on which we will fulfill our promise: to achieve carbon neutrality within our own operations and supply chain and use green power for 100% of all electricity consumed by the end of the decade.

This is not a simple task. Achieving carbon neutrality is complex and requires us to consider both social values and business logic. It entails the transformation of each of Tencent's business sectors, requiring us to dive deep into unfamiliar territory such as energy and low-carbon technologies. Nonetheless, we believe that this is the right thing to do. It is not only Tencent's responsibility as a global technology leader, but also an essential requirement for the company's development and to realize our vision of "tech for good". We must remain patient and persistent for the long run, while embracing the contributions required of us as society progresses toward carbon neutrality. We will witness and assist the realization of this historical process.

To achieve carbon neutrality, Tencent will prioritize the use of active emissions reduction measures while keeping the use of carbon offsets to a minimum. We will focus on improving the energy efficiency of our data centers, actively participate in the transition to sustainable energy and the establishment of related





markets, and continue to explore technological innovations in the field of carbon offsets.

We believe that digitalization and reducing carbon emissions are the twin wheels driving China's economic development forward. In the future, Tencent will use digital technologies and platforms to promote and facilitate a new low-carbon lifestyle and encourage more users to seriously consider carbon consumption when making choices.

At the same time, we will use industrial digitalization to support energy conservation and emissions reduction through improved efficiency, flexible infrastructure, and outreach. As a digital technology company, the significance of Tencent's carbon-neutrality strategy lies not only in its own energy conservation and emissions reductions, but in leveraging carbon neutrality to drive scientific research, technological development, and applied innovation, ultimately helping the rapid development of low-carbon technology. In addition, we will integrate and innovate the consumer and industrial internet, continue to popularize low-carbon lifestyles, and promote the transformation and improvement of traditional industries, all while promoting the sustainable development of the local and shared global economies.

Carbon neutrality is not the only task on our journey to sustainable social development. It is closely interwoven with other issues like fundamental research, rural revitalization, educational equality, and an aging society. These were all important reasons for Tencent to elevate its strategies and set up a Sustainable Social Value Organization in 2021. Sustainable social value innovation is not just for show or to "check off" boxes, it is something that is core to our entire business strategy and growth over the long term. Our investment in sustainable social values will be the root of Tencent's development; the deeper the roots, the farther we can go and the healthier we can grow.

This report is just a starting point. We look forward to working together with our partners and stakeholders as we strive towards a more sustainable future.

MA Huateng (Pony Ma)
Co-Founder
Chairman of the Board and Chief Executive Officer
February 2022

Executive Summary

Tencent's Carbon Neutrality Target

Tencent's Commitments



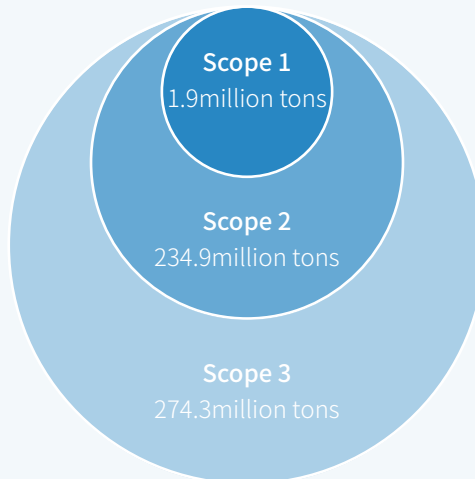
Tencent pledges to achieve carbon neutrality in its own operations and supply chain, and to use green power for 100% of all electricity consumed by 2030.



Tencent's Current Greenhouse Gas Emissions

Tencent's total greenhouse gas emissions and composition in 2021

5.111 million tons



Scope 1

Emissions from sources owned or directly controlled by Tencent, such as company-owned vehicles, fuel generators, and refrigerants, amounted to 0.019 million MtCO_{2e}, or 0.4% of the company's total emissions.

Scope 2

Emissions from the generation of power and other energy purchased for Tencent operations, for example, electricity consumed by company-owned or jointly constructed data centers and office buildings, amounted to 2.349 million MtCO_{2e}, or 45.9% of the company's total emissions.

Scope 3

Indirect emissions from the supply chain, such as capital goods, leased assets, and employee business travel, amounted to 2.743 million MtCO_{2e}, or 53.7% of the company's total emissions.

Tencent Carbon Neutrality Key Initiatives

Tencent will prioritize the reduction of emissions and the adoption of renewable energy, using carbon offsets only as a supplementary measure, to achieve the goal of carbon neutrality.

Energy Efficiency

Initiatives and Effectiveness

- **Enhanced Energy Efficiency in Tencent Offices** Tencent has obtained several LEED Gold certifications and implemented energy consumption management for all its owned and rented office space in China.
- **Modular Data Centers and Improving PUE** Tencent's fourth-generation T-Block technology can lower Power Usage Effectiveness (PUE), a standard metric for measuring data center efficiency, to at least 1.3 and as much as 1.06.
- **Innovations in Heating and Cooling Technology** Explore energy-saving cooling technologies and upgrade heat recovery systems across Tencent's data centers.

Renewable energy

Initiatives and Effectiveness

- **Renewable Energy Procurement** Tencent has committed to purchasing 500 GWh of renewable energy in 2022 and has secured the partial annual generation capacity of six wind and solar projects.
- **Centralized Renewable Energy Power Plants** Tencent is exploring centralized renewable-energy power plants, with a focus on onshore wind and solar technologies, as well as emerging power-generation methods such as offshore wind power.

Carbon Offsets

Initiatives and Effectiveness

- **Emerging Carbon Offset Technologies** Tencent will also support the development of emerging carbon-offset technologies.



Helping Our Community Reach "Net Zero"

In addition to its own carbon neutrality goal, Tencent aspires to be a leader in encouraging society to embrace sustainable and lower-carbon consumption, facilitating a low-carbon transformation across industries, and promoting sustainable economic and social development, which is in line with our strategic goal to promote sustainable innovation for social value.

Promote low-carbon lifestyles

Initiatives and Effectiveness

- Launch a Carbon Neutrality Quiz Mini Program to promote awareness and build more knowledge about how to live a low-carbon lifestyle.
- Develop the "Carbon Island" Mini Game to guide the public towards carbon neutrality.
- Launch the "Low Carbon Planet" Mini Program to build a carbon inclusion platform.
- Tencent's TiMi Studio Group joined in the United Nations Environment Programme (UNEP) "Playing for the Planet Alliance". TiMi Studio Group launched the Green Game Jam for Youth initiative and created educational experiences around critical climate challenges that reached more than 110 million players globally.

Facilitate a low-carbon transformation for the industrial sector

Initiatives and Effectiveness

- Tencent's digital technologies help optimize energy efficiency to achieve zero-carbon buildings and parks.
- Tencent's work and collaboration software suite, including Tencent Meeting/VooV Meeting, WeCom, Tencent Docs, and Tencent WeCard, has reduced carbon emissions.
- Tencent Cloud will offer sustainable computing power to businesses to help them build low-carbon digital infrastructure.

Support the innovation for sustainable social value

Initiatives and Effectiveness

- Focus on disruptive innovative technologies to help the development and industrialization of low-carbon, zero-carbon and carbon-negative technologies.
- Focus on social issues related to carbon neutrality, such as rural revitalization and scientific development, to create broader social value.



CHAPTER ONE



Tencent's Thoughts On Carbon Neutrality

In recent years, the global response to climate change has accelerated significantly. A global consensus has emerged that climate change is one of the most significant challenges facing humanity this century. In September 2020, China made the strategic decision to realize carbon neutrality by 2060. Embracing the challenges of carbon neutrality and realizing common development through sustainable transformation has become an important shared duty around the world.

At the same time, the roadmap to carbon neutrality is not only related to the energy transition, but also involves the comprehensive transformation of the economy and society. It is a long, complex, and far-reaching process that requires the joint efforts of policy, technology, capital, and consumer awareness. This has made us aware of both the need to act now and to maintain this as a long-term strategic issue.

It is Tencent's responsibility to achieve carbon neutrality by adhering to our mission of "Value for Users, Tech for Good." Although the internet industry has a lower emissions intensity than that of heavy industries such as electric power and steel, our energy demand is inevitably expected to grow rapidly with rising digital demands. Yet we also foresee the possibility of severing the link between business growth and carbon emissions through rapid and scientific action. Through our practices and exploration over the past year, Tencent's carbon-neutrality plan has raised the requirements we set for ourselves in terms of time and scope to establish scientific carbon-neutrality goals and feasible action plans.

Carbon neutrality entails the comprehensive transformation of economic and social development, which requires all walks of life to participate and take action. In addition to achieving our own carbon-neutrality goals, we also aim to act as a helper and connector by taking the initiative in assisting the low-carbon transformation of society and supporting emerging low-carbon technologies. Digital technology can promote industrial advancement and low-carbon economic development via efficiency improvements, widespread connections, and other benefits. Tencent's ecosystem connects with a broad segment of consumers, who are themselves practitioners of a low-carbon lifestyle. It is through shared business and consumer efforts that we will drive the low-carbon transformation of society. At the same time, the development of emerging low-carbon technology also requires long-term support from the research community and continual testing and development in the industrial environment.



CHAPTER TWO



Tencent's Current Greenhouse Gas Emissions, Carbon Neutrality Target, and Carbon Neutrality Roadmap

In order to support a sustainable transformation of our markets, we have developed challenging goals and action plans to ensure that Tencent itself is positioned to make meaningful contributions to the global aspiration of carbon neutrality.



■ Tencent's Carbon Neutrality Target

During China's Two Sessions (the annual session of parliament and its advisory body) in 2021, Tencent Chief Executive Pony Ma submitted a report titled: "Suggestions on Implementing New Development Concepts and Promoting China's Science and Technology Enterprises to Achieve Carbon Neutrality." At that time, Tencent began setting its carbon neutrality goal and emissions reduction plan. After almost a year of exploration and practice, we have determined Tencent's carbon neutrality goal to be the following:

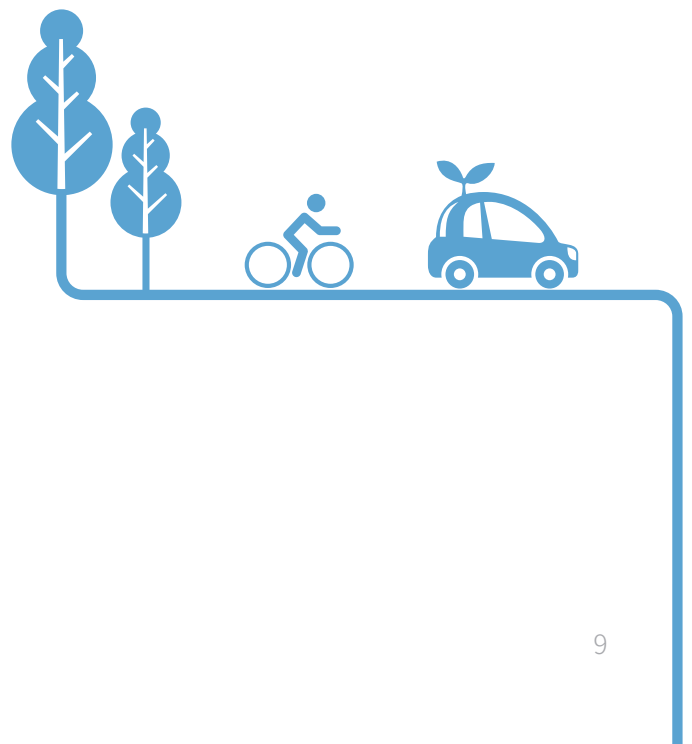
Tencent pledges to achieve carbon neutrality in its own operations and supply chain, and to use green power for 100% of all electricity consumed by 2030.

The goal was set based on the following considerations:

- Tencent hopes to set stricter requirements for itself and become a pioneer in carbon neutrality among technology enterprises. We have benchmarked ourselves against global internet companies and we are determined to achieve comprehensive carbon neutrality in our operations and supply chains as soon as possible;
- Through a detailed examination of Tencent's own greenhouse gas emissions, as well as the planning and preliminary implementation of emissions reduction plans, we believe that it is challenging but feasible to achieve carbon

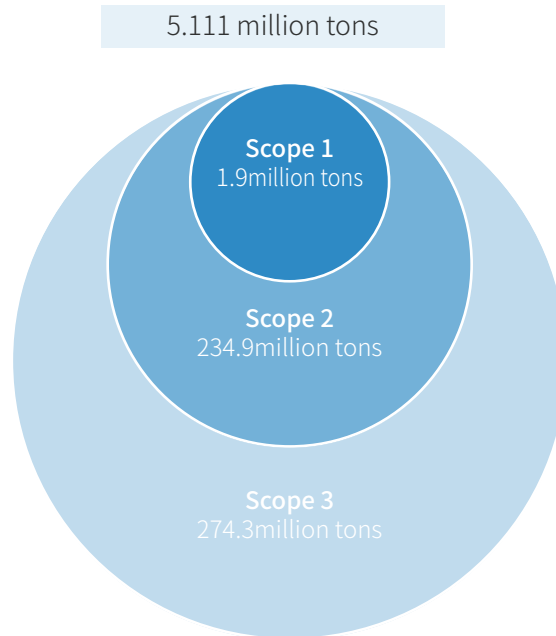
neutrality in our operations and supply chain in the next 10 years;

- Meanwhile, the next 10 years will also be a stage of rapid carbon-neutral transformation for China and its entire society. The proportion of new energy resources used in power grids will greatly increase, and important tools such as the sustainable-power trading system, carbon-trading market, and voluntary emissions-reduction market, will all take shape rapidly. New low-carbon technologies will emerge one after another. We hope to actively participate in this process and assist the development of emerging technologies and improvement of market mechanisms. We have therefore considered and put forth our overall goal of achieving carbon neutrality in our operations and supply chain by 2030.



■ Tencent's Current Greenhouse Gas Emissions

Tencent's total greenhouse gas emissions and composition in 2021



In 2021, Tencent emitted the equivalent of 5.111 million tons of carbon dioxide across three main categories:

Scope 1

Emissions from sources owned or directly controlled by Tencent, such as company-owned vehicles, fuel generators, and coolants, amounted to 0.019 million MtCO₂e, or 0.4% of the company's total emissions.

Scope 2

Emissions from the generation of power and other energy purchased for Tencent operations, for example, electricity consumed by company-owned or jointly constructed data centers and office buildings, amounted to 2.349 million MtCO₂e, or 45.9% of the company's total emissions.

Scope 3

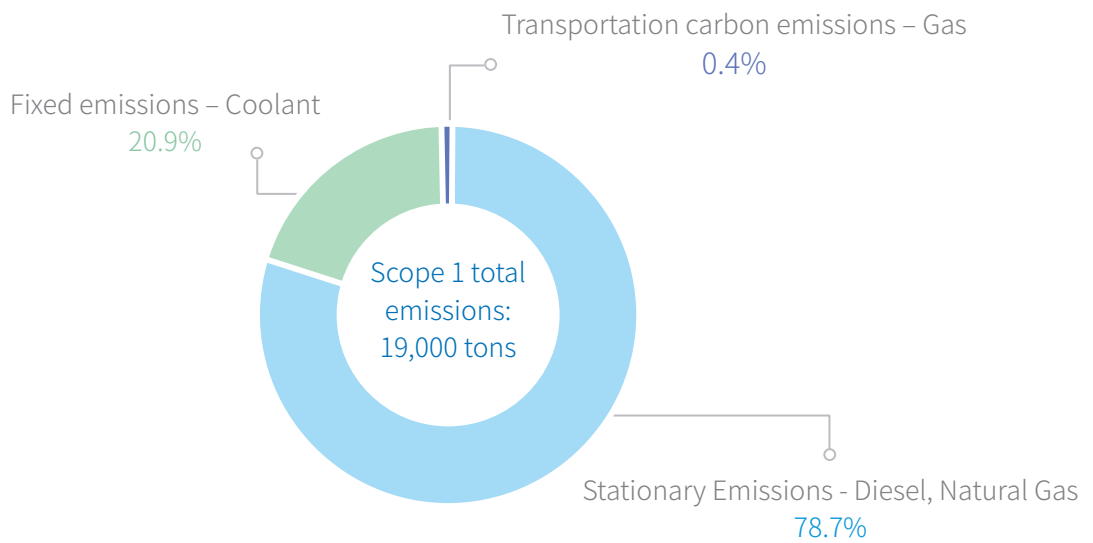
Indirect emissions from the supply chain, such as infrastructure materials, purchased servers and energy use in company-leased data centers, and employee commuting, amounted to 2.743 million MtCO₂e, or 53.7% of the company's total emissions.

Operational Emissions

Emissions from Tencent's own operations include direct emissions (Scope 1) and indirect emissions (Scope 2), of which indirect emissions account for an absolute proportion of Tencent's operational emissions.

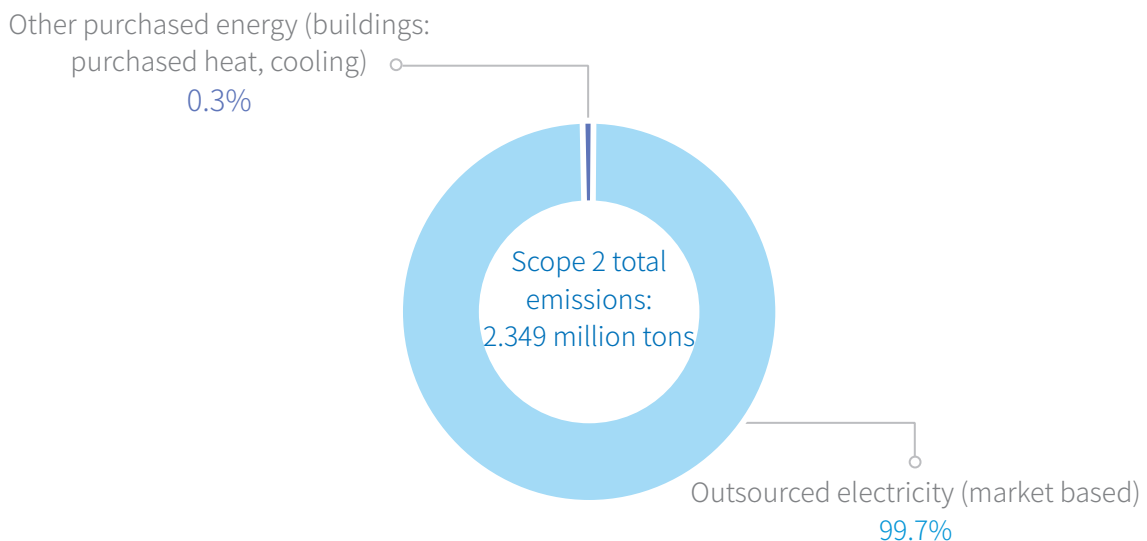
Scope 1

In direct emissions (Scope 1), stationary emissions are the predominant emissions sources, including diesel, natural gas, and coolant emissions, which are respectively 78.7% and 20.9%. Both are used for the operation of owned buildings and data centers, and the other 0.4% comes from company-owned vehicle fuel.



Scope 2

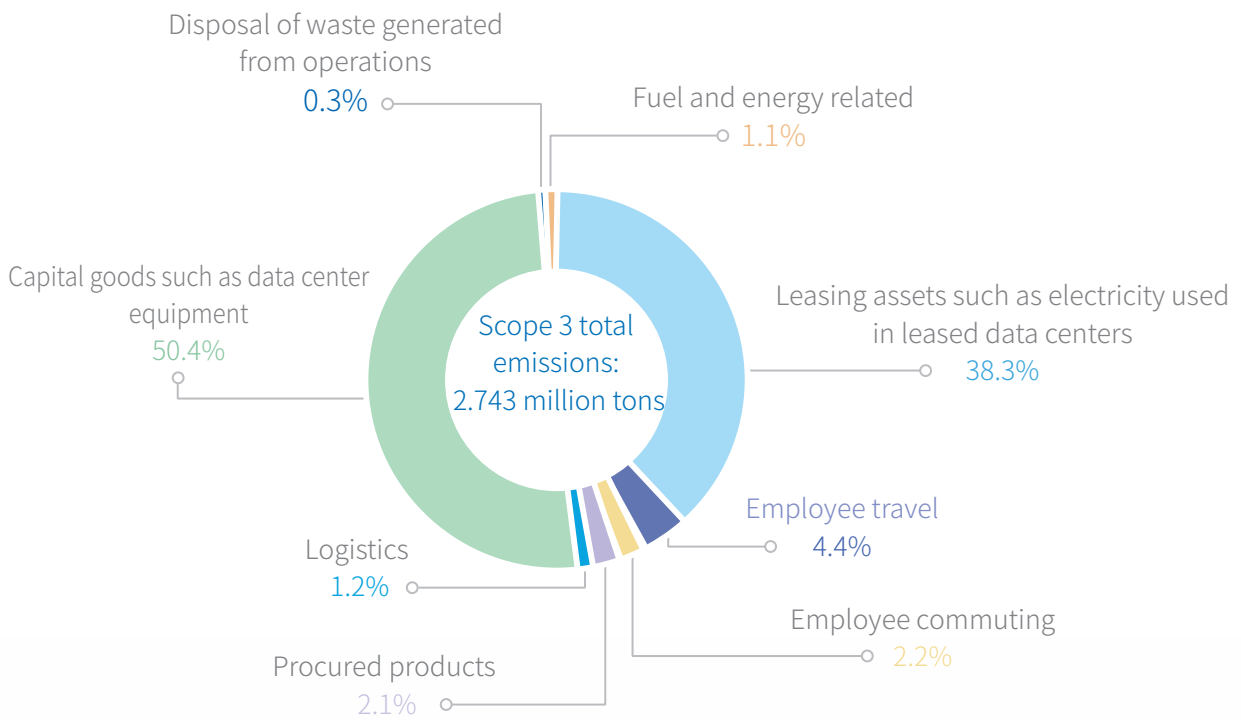
Indirect emissions (Scope 2) result in the bulk of emissions from operations, accounting for more than 99% of the total operating emissions. This mainly consists of purchased electricity and a small part from other types of purchased energy, such as heating, as well as the operation of co-constructed data centers and owned and leased buildings.



Supply Chain Emissions

Scope 3

Greenhouse gas (GHG) emissions in the supply chain mainly come from capital goods (such as data center equipment and infrastructure consumables), energy used in leased assets (such as electricity for leased data centers), and employee travel, as well as other product procurement, employee commuting, logistics, and other fields.



>> Extended Reading

Tencent's Inventory Method for Current Greenhouse Gas Emissions

Inventory Scope

We set 2021 as the baseline year for Tencent's carbon neutrality initiative. According to the scope and calculation methods defined in the Greenhouse Gas Inventory Protocol (GHG Protocol) jointly issued by the World Resources Institute (WRI) and the World Business Council for Sustainable Development, we conducted a systematic carbon audit, covering Tencent's Scope 1, 2, and 3 emissions. The definition of each scope and the main emissions activities are as follows:

Scope	Definition	Major emissions activities
Scope 1	Direct emissions from GHG sources owned or controlled by Tencent	<ul style="list-style-type: none"> ■ Fuel for generators and power generation equipment ■ Company-owned vehicle fuel ■ Coolant escape
Scope 2	Indirect greenhouse gas emissions from electricity or other energy sources purchased by Tencent	<ul style="list-style-type: none"> ■ Owned and co-built data center electricity ■ Electricity for owned and leased buildings ■ External procurement of heating for owned and co-built data centers ■ External procurement of heating for owned and leased buildings
Scope 3	All other indirect emissions from Tencent's supply chain	<ul style="list-style-type: none"> ■ Electricity for leased data centers ■ Upstream production of servers and building materials ■ Business travel ■ Employee commuting ■ Upstream raw materials, production of office supplies ■ Transportation of fuel, transmission losses ■ Operational waste, garbage disposal ■ Transportation of raw materials and commodities

Related Definitions

The Greenhouse Gas Inventory Protocol (GHG Protocol) jointly issued by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) categorizes companies' greenhouse gas emissions into Scopes 1-3. Scope 1 is defined as "Emissions from operations owned or controlled by the reporting entity"; Scope 2 is defined as "Emissions from purchased or acquired electricity, steam, heating, or cooling consumed by the reporting entity"; and Scope 3 is defined as "All indirect emissions (not included in Scope 2) that occur in the company's supply chain, including upstream and downstream emissions".

More than 90% of Tencent's emissions are concentrated in electricity and infrastructure and equipment procurement, and the remaining emissions are very scattered. Covering all of Tencent's emission sources, we coordinated with data centers, administration, finance, infrastructure, and other departments to take an inventory of Tencent's carbon emissions baseline and build a detailed data collection system.

In this carbon inventory process, we adhered to a scientifically rigorous attitude and strived to be accurate and comprehensive, but were subject to differences in the availability of data from different emission sources. The accuracy and comprehensiveness of the data still needs to be improved. For example, for Scope 3, we conducted an inventory of key Scope 3 carbon emissions based on the GHG Protocol. In the future, we will continue to improve the inventory process to accurately define the range of Scope 3 GHG emissions, sort out variations in Scope 3 GHG emission sources due to business changes, and adjust and update them year by year.

Inventory deep dive

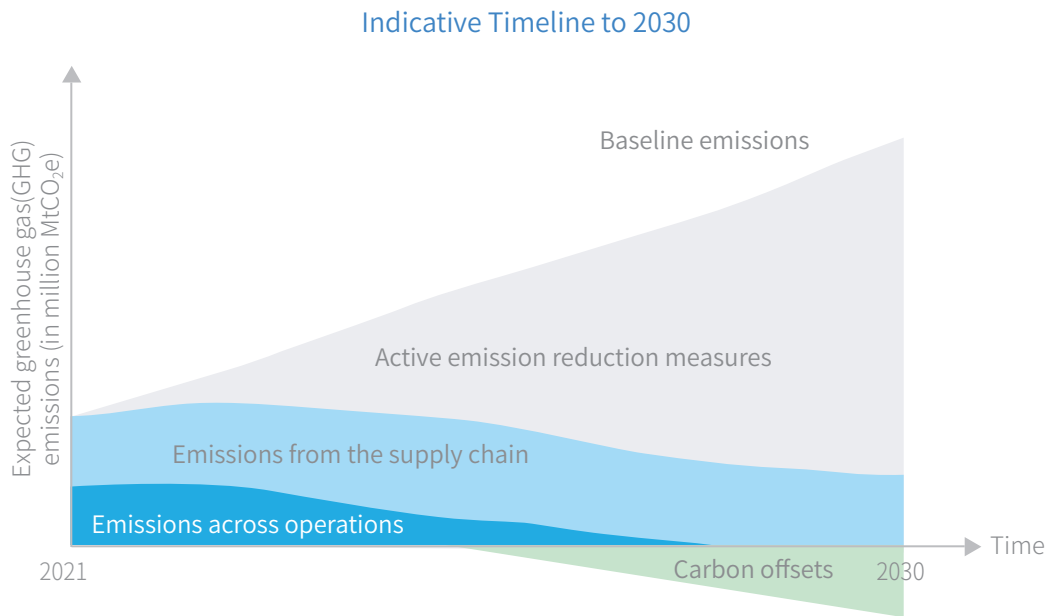
- In this inventory, the emissions calculated based on actual carbon emission activities accounted for about 65% of total emissions, such as the electricity consumption of Tencent's owned and co-built data centers in various provinces, some infrastructure consumables, travel mileage, and fuel. We calculated emissions based on the emission factors of actual carbon-emitting activities, such as the emission factors of the power system in each province, the average emission factors of various building materials, etc.
- About 30% of emissions were calculated based on expenditures, such as some equipment purchases and some travel expenses, which were estimated according to the average emission factor per yuan.
- Due to the lack of availability and completeness of some data, less than 5% of the emissions were calculated with the "industry average per capita level" method, such as waste, employee commuting, etc. These were estimated according to per capita consumption and the corresponding emission factor.

Inventory Comprehensiveness

- In this inventory, the company sought to pursue comprehensive data coverage, with most of our emissions statistics covering more than 90% of the accounting range that could be identified for corresponding categories.

■ Tencent's Operations and Supply Chain Carbon Neutrality Roadmap

Tencent will prioritize the use of active emissions reduction measures while keeping the use of carbon offsets to a minimum, and promote carbon neutrality in our own operations and supply chain. First of all, we strive to improve efficiency through energy conservation and to control and reduce emissions by reducing energy consumption per unit of output value even as business grows, thereby significantly improving resource efficiency. Secondly, we will greatly increase the proportion of renewable energy we use, especially in our electricity consumption. We will actively participate in renewable power trading and explore investment in and development of new energy projects, which will decouple our energy demand and carbon emissions. Finally, we will use carbon offsets as a supplementary method based on actual needs and eventually achieve carbon neutrality. During this process, we will prioritize the use of active emission reduction measures and minimize the use of carbon offsets, which is consistent with the basic principles of the 1.5° C target of the Paris Agreement.



*Baseline emissions: Level of GHG emitted in the absence of any measures to reduce emissions

It is estimated that by 2030, Tencent will drive emissions reductions in our operations (Scope 1 + Scope 2 + employee travel/commuting) through proactive emission reductions, while advancing emissions reductions in our supply chain (Scope 3). For a few parts of the supply chain in which it is difficult to reduce emissions, mainly equipment procurement and building materials, we will carry out offsetting by buying carbon emission reduction credits to achieve overall carbon neutrality in our Scopes 1-3.

Key Initiative 1: Energy Reduction and Efficiency Improvement

Through technological improvement and management optimization, we shall strive to reduce the demand for new energy while striving to improve our energy efficiency as part of achieving our carbon reduction goals.

Energy Reduction in Office Buildings

Even before the launch of our carbon neutrality plan, Tencent has promoted energy-saving efforts in our office buildings for many years and has achieved recognition for this work. We design our office buildings with energy conservation at top of mind. Tencent has a number of buildings that have obtained LEED Gold certification, including the Shenzhen Binhai Building, Beijing Tencent Building, Chengdu Tencent Buildings A and B, Shanghai Binjiang Building, and others. The Shenzhen Binhai Building, Chengdu Tencent Buildings A and B, and our Wuhan R&D Center have also obtained a 2-star rating from China's Green Building Rating Program.

We also promote energy conservation in our office buildings through various means such as energy consumption management and technological transformation. Since 2012, Tencent has performed energy audits and optimized operations of our owned and leased office buildings to make them more energy efficient. Our energy-consumption management work has covered all of Tencent's owned and leased office space and is expanding to take into consideration buildings under construction and planning. We continuously work to reduce the emissions

of our office buildings by fully understanding and analyzing the systems of each building, and then continually investing in energy-saving renovations of lighting, HVAC, water, and other facilities on the basis of their safe operation and not impacting employees' experience. Tencent's building operation work has also been recognized professionally. The Shenzhen Binhai Building and Chengdu Tencent Buildings A and B have obtained LEED Gold certification, and the Beijing Tencent Building is undergoing LEED Platinum certification.

We actively educate our employees about the importance of reducing emissions and regularly hold informational and other activities to encourage them to develop eco-conscious habits such as turning off lights and reducing air conditioning. We have also found it important for Tencent to collaborate with partners, set energy management plans with our property management partners, and establish key performance indicators (KPIs) to jointly promote energy conservation in each building.



Tencent Binhai Building

Tencent Binhai Building

Around 2012, Tencent began planning a new office building, the Tencent Binhai Building. From the beginning of the design process, full consideration was given to low-carbon approaches and energy reduction. The roof of the building and the surrounding paving stones consisted of water-absorbing "sponge bricks" that help to recycle and reuse rainwater, thereby reducing consumption of tap water in the restrooms and for greenery and creating the first "sponge building" in the country. Meanwhile, the orientation, curtain wall, and shutters of the building were specially designed on the basis of geographic information to maximize the use of natural light and reduce the power consumption of internal lighting. The building's paper products, including facial tissue, paper towels, and printer paper, have all passed Forest Stewardship Council certification, meaning they are made using sustainable forestry practices. In 2020, by implementing energy-efficiency measures such as optimizing the air conditioning controls, the Binhai Building saved 5.98 GWh of electricity and



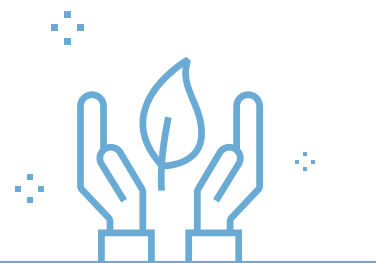
Panorama of Tencent Gui'an Qixing Data Center

reduced emissions by the equivalent of about 2,690 tons of carbon dioxide compared with 2019.

Tencent's fourth-generation data center: T-Block

Tencent's fourth-generation data center technology, T-Block, can achieve rapid delivery of data centers in a standardized, productized, and prefabricated manner. T-Block shortens civil construction time by 50% and the delivery time of mechanical and electrical systems by 40%, meaning a facility can be completed in just one year. The energy-saving mode integrates various energy-saving technologies, and the office electricity, power-supply module, IT module, cooling module, and solar-power generation are all packaged into "containers" to achieve ultra-low energy consumption. The Power Usage Effectiveness (PUE) is below 1.3. By way of example, a campus with 300,000 servers can save about 250 GWh of electricity a year compared with a traditional data center.

At the system level, TencentOS's WuNeng system adaptively sets CPU scheduling policies according to the business load of the data center to achieve the lowest system power consumption while still ensuring business performance. During verification scenarios, the WuNeng system accounted for about 10% of the overall reduction in energy consumption of the complete build. It is expected to save 200 GWh/year after large-scale adoption in 2022-2023.



Innovative cooling technology for data centers

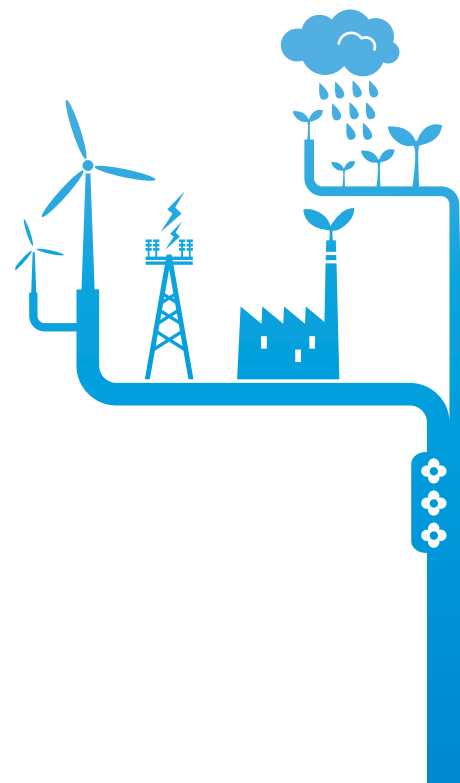
In order to improve the cooling efficiency and reduce the energy consumption of the data center, Tencent Data Center has tested many emerging technologies, such as natural cooling, liquid cooling, tri-generation, waste-heat recovery, and other innovations.

- The Tencent Gui'an Qixing Data Center was built in a cave in Guizhou Province in southwest China, making full use of the natural low temperature to greatly reduce the use of air conditioning. T-Block makes wide use of advanced, self-developed, indirect evaporative-cooling air handling units. By taking advantage of the cool outdoor air combined with water spray, these units replace large compressor systems to achieve low PUE operation. We are also exploring extremely efficient data center technical solutions using cold plate liquid-cooling technology. We have already conducted a small-scale pilot in the Qingyuan area, and it has achieved a PUE as low as 1.06.
- On its foundation of solar power generation, Tencent's Shanghai Qingpu Data Center has adopted tri-generation to achieve greater energy efficiency. We built a natural gas plant to power the data center. Hot water and gas produced by the power generation are introduced into evaporative cooling equipment to produce chilled water to cool the data center. In winter, the hot water can also heat the surrounding office buildings and residential areas. The primary energy utilization rate of the entire system is greatly improved, and energy gradient utilization is achieved.

- Tencent's Tianjin Data Center recycles waste heat generated by the servers. Through a heat pump, water in the municipal network can be heated to 55C for residential heating in winter. This can reduce carbon dioxide emissions by 52,400 tons per year, equivalent to planting 2.86 million trees, equal to a forest covering 2,500 football fields. We plan to implement this technology in our Huailai, Zhangjiakou facility to realize more eco-friendly heating.



Waste Heat Recovery System in Tianjin Data Center




Data Center Intelligence Platform

Tencent Data Center has combined proprietary cutting-edge technology, diverse operating and management scenarios to create the data center intelligence platform. The platform manages more than 100 of Tencent's data centers around the world, accessing data from more than 15 million infrastructure measurement points. The platform applies automated management, monitoring and analysis, and intelligent recommendations to help make our data centers more efficient and eco-friendly.


In 2021, Tencent data center intelligence platform continued to play an important role in our carbon neutrality efforts through functions including carbon emissions inspection, load forecasting, AI cooling optimization, AI forecasting of equipment health, analysis of renewable energy utilization, and microgrid monitoring. The platform can automatically and accurately obtain energy data in real time and carry out refined classification, statistical, and scientific modeling. Combined with big data and artificial intelligence, it can provide the most economical energy and emissions reduction solutions to assist in operational decisions.

6 Measures of Tencent Data Center Energy Conservation and Consumption Reduction



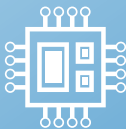
Modularization

We have used our experience to encapsulate large data center planning methodologies, such as the Normandy model and the Tbase model. An example of this is the modular design of our fourth-generation T-Block data center technology, discussed above.



Redundant Design

Overall optimization of DR power-supply architecture, overall DC redundancy optimization, and battery-system design optimization



Energy Use

Improve CPU utilization of main IT equipment and improve energy-conversion efficiency of key power equipment




Cooling Technology

Make full use of air cooling and experiment with cold plate liquid cooling to control the temperature of high-power servers



Site Selection

Comprehensive consideration of local new energy sources, external power resources, network infrastructure such as internal and external connections and communication, business needs, climate, and other factors



Load Optimization

Use AI algorithms to predict server demand peaks to intelligently load-shift and better achieve load balancing and renewable power matching

Key Initiative 2: Renewable Energy

Electricity consumption, especially in data centers, is the main source of carbon emissions for internet technology companies. The carbon emissions indirectly generated by the purchased electricity of Tencent's data centers and buildings account for more than 65% of our total emissions. Given the constant rise in demand for computing power, even while factoring in improvements in energy efficiency, we expect that related electricity consumption may continue to grow. Significantly increasing the proportion of renewable energy we use and breaking the link between energy demand and carbon emissions are of strategic significance for Tencent if we are to achieve carbon neutrality as scheduled.

At present, China's renewable energy market is still developing, and so are related policies and market mechanisms. The overall supply and reliability of renewable energy still needs to be improved. For enterprises, there are challenges in purchasing renewable energy on a large scale. For example, renewable energy is usually directly connected to the end users, and it is difficult to purchase 100% renewable energy through the power grid. Tools like green energy certifications are still in their early days, and related policies are still being explored. We are working diligently in many areas to meet these challenges and increase our mix of renewable energy. We have begun exploring distributed new energy, microgrids, and other technology at our own data center nodes with the help of rooftop solar cells and other facilities. Meanwhile, we are

actively making transactions for cleaner energy, promoting development of the market, and exploring investment in and development of new energy programs.



Tencent Data Center Roof Photovoltaic

Development and construction of distributed new energy and microgrid technologies

In 2020, Tencent officially launched the development and construction of distributed rooftop solar cells at our data centers. Due to reliability and safety issues, data centers pose more challenges to photovoltaic installations compared to those at industrial and commercial enterprises. After repeated engineering and technical demonstrations, distributed solar project of 6.6 MW came online at Tencent's Qingyuan Qingxin Data Center Park in September 2021 and has so far generated more than 4 GWh. We are also pleased to announce that the 13 MW distributed solar installation at Yizheng Data Center began generating power in February 2022. Additionally, we are planning some 32 MW worth of distributed solar projects at our Qingyuan Qingcheng, Tianjin High-tech Zone, Shanghai Qingpu, and other locations, as well as exploring a 30 MW integrated wind-solar project in Huailai, Hebei. This reflects a new model of more eco-friendly and lower-carbon data centers. To date,

we have more than 80 MW of distributed new energy projects in the data center parks that are either operational or are under construction. The annual power generation of these projects after completion is expected to exceed 80 GWh, which can effectively reduce the energy cost of data centers while increasing their utilization ratio of renewable energy.

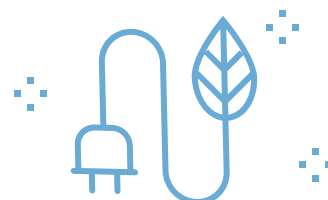
In order to enhance the load elasticity of our data centers, we plan to install energy storage stations in Qingyuan Qingxin Park and Shanghai Qingpu Park. This means the data centers will no longer be a simple power load, but instead a transferable and adjustable power node. We are also partnering with Tsinghua University, the Huazhong University of Science and Technology, Xi'an Jiaotong University, and other universities to optimize use of distributed new energy and explore low-carbon energy scenarios such as solar storage and charging, wind and solar storage, and source network load storage. These partnerships explore the use of digital systems such as smart energy-management platforms, electricity market trading, and carbon emissions trading. We are seeking better models for renewable energy utilization, working hard to achieve the goal of low-carbon transformation, and taking responsibility for efficient and sustainable development.



Green electricity market transaction

In 2021, Tencent Data Center sought to become a leader in sustainable-energy trading. To that end, we set up a formal sustainable-energy working group, formulated strategies and methods for systematic green power trading, and explored the feasibility of various transactions. In July 2021, Tencent began preliminary studies of hydropower transactions. The Chongqing Tencent Cloud Data Center purchased 60 GWh of renewable energy, covering all data center electricity consumption from August to December. This made it the first large-scale data center in Chongqing to rely solely on renewable energy.

In the fourth quarter of 2021, Tencent optimized its overall sustainable-power trading strategy. We planned to avoid the risk of market fluctuations by stabilizing purchases through long-term contracts that locked in green power projects. We also sought to follow the three principles of "additionality," "traceability," and "proximity" when securing sustainable energy. In the 2022 trading market, we have signed sustainable-power trading contracts for a total of 504 GWh, locking in the partial power generation of six wind and solar projects. This transaction meant the annual transaction volume of mid- and long-term agreements in several of our large data centers accounts for 43.5% of their annual electricity consumption. Among them, the Tencent Qingcheng Data Center in Guangdong uses renewable energy for 100% of its annual electricity needs.



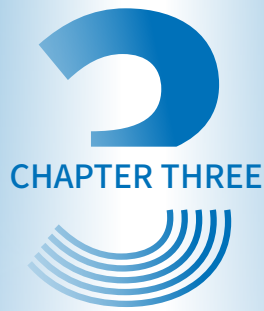
Centralized new energy project investment and development

In order to ensure a steady supply of clean energy, in addition to buying green power, we also explored development of centralized new energy power stations. Because the maturity of the sustainable electricity market varies across different regions of China, we hope to guarantee our own supply of green power through these programs. We also hope that by prioritizing development of centralized wind and solar power projects with good "proximity," we can ensure the "additionality" of our projects and contribute incrementally to China's sustainable-energy market. While focusing on impressive onshore and offshore projects, we also continued to focus on the integration of power sources, grids, load, and storage, as well as projects that use hybrid energy sources. We have also explored an internet-based energy-management platform, a coupling technology for power systems based on alternative energy, and promoted the digital transformation of the alternative-energy industry. In 2021, we started to discuss partnership opportunities with a number of alternative-energy developers, and took the lead to explore projects in Guangdong Province with alternative-energy partners to demonstrate the integration of power sources, grids, load, and storage. As we promote the development of the alternative-energy market, we have also explored ways for Chinese technology enterprises to participate, as well as the role they may play in the future.

Key Initiative 3: Carbon offsets

We will realize the majority of our emission-reduction credits through active emissions reductions. However, due to the complexity of our supply chain, we expect that a small proportion of emissions will not be fully reduced by 2030. We plan to mitigate these emissions through carbon offsets. In addition to purchasing carbon offsets that are based on mature carbon-capturing methods, we also hope to support emerging carbon-offset technologies.

In the field of nature-based solutions (NBS), we have gradually started exploring the use of marine carbon sinks and forestry carbon sinks to mitigate our emissions while also supporting emerging carbon-sink technologies, development of quantitative methodologies, and market trading. In terms of agricultural-based carbon offsets, organic farming and soil carbon sinks are the areas we focus on. We have also paid close attention to rural revitalization and explored ways to combine that with agricultural emissions reduction to promote sustainable rural development.



Contribute to global carbon-neutral process

The "3060" target (to achieve carbon emissions peaks in 2030 and carbon neutrality in 2060) is a solemn commitment made by China to the international community. It is a broad and profound reform that requires the participation of all stakeholders. We are well aware that Tencent's development benefits from overall economic and social development. Helping achieve the two carbon goals is thus part of our corporate social responsibility. It is something our vision of "Tech for Good" requires. It is our willing response to the expectations placed on us. Tencent not only needs to achieve our own goal of carbon neutrality, but we must also actively participate in the low-carbon transformation of the nation and society, giving full play to our relevant capabilities and striving to accelerate progress towards carbon neutrality.

On April 19, 2021, Tencent announced its fourth strategic evolution and set our strategy as "Help the consumer internet take root, embrace the industrial internet, and promote sustainable innovation for social value". Carbon neutrality has been deeply integrated into Tencent's thinking in every aspect of our business. In essence, carbon neutrality is systematic reform to restrict carbon emissions. It involves demand, production, technology, and institutions. Achieving carbon neutrality will require accelerating of the development of low-carbon technology, the comprehensive low-carbon transformation of industry, as well as significant changes in consumption habits and lifestyles. This is our key direction. Next, we will promote this low-carbon transformation by leading consumers to a low-carbon lifestyle and with digitalization across industry while also promoting sustainable social-value innovation. Through these three areas we will introduce Tencent's thinking and efforts towards helping the nation's low-carbon transformation.



■ Leading consumers to adopt a green lifestyle

As living standards rise, the impact of consumer decisions on the overall carbon emissions of society has become more and more pronounced. There are many sources of emissions on the consumer side, and measures to reduce them are scattered. Therefore, it is not an easy task to promote emissions reductions among the public. More importantly, the low-carbon transition has to be people-oriented. The significance of carbon neutrality lies precisely in meeting people's desire for a better life. A low-carbon lifestyle and high quality of life are not contradictory, but should be realized in sync. In our understanding, the way we accelerate low-carbon transformation among consumers is not by encouraging every person to reduce some huge amount of emissions, but by constructing a low-carbon mindset. Low-carbon consumption decisions can influence the supply end, thereby guiding and accelerating emissions reductions by industry. This will also provide continuity and support for low-carbon industries. Therefore, we believe that a low-carbon lifestyle can and should become more fashionable and popular.

Tencent is deeply rooted into the consumer internet and has many internet products that are familiar to Chinese and other consumers. Our business ecosystem connects mass consumers whose choices directly or indirectly affect the carbon neutrality of broader society. Based on Tencent's wide reach, we have the responsibility to advocate for a new low-carbon lifestyle. To this end, we launched a series of internet products with the hope of simplifying the complex and specialized topic of carbon neutrality and introduce the concept of the low-carbon lifestyle through lively and entertaining interactions.

Weixin/WeChat has become the internet product with the most active users in China. Through our actions and our engagements we strive to help promote low-carbon knowledge among our users. In August 2021, we partnered with the Publicity and Education Center of the Ministry of Ecology and Environment to launch carbon-neutral, scientific public-interest activities. With the **carbon neutrality Q&A** Mini Program, we helped users learn about carbon neutrality and contribute to carbon-neutral charities during the experience. Users can answer three carbon neutrality-related questions, and each time they answer one correctly, the Tencent Charity Foundation will make a donation to support

programs to protect grasslands and forests. As of January 31, 2022, 7.7 million users had taken the quiz, providing 32.53 million answers.

In order to explore more diverse ways of communication, we have sought to incorporate carbon neutrality in our own business ecosystem based on our insights accumulated from many years of development in the consumer internet. As one of Tencent's core businesses, the interactivity and immersion of games make them an effective tool to spread low-carbon awareness and educate the public. In January 2022, we launched "**Carbon Island**", a charity game that simulates a city's progress towards carbon



neutrality. Players can build a carbon-neutral island through urban reconstruction, ecology districts, and carbon-neutral demonstration areas. The game strived to mimic the carbon-neutral construction paths in real life and covered knowledge on industrial transformation and improvement, personal emissions-reduction, and environmental preservation. It innovatively explored the intersection of games and real-life charity, encouraged players to participate in environmental programs, and helped raise awareness of a low-carbon lifestyle among the public.



Tencent Carbon Island Homepage

Meanwhile, Tencent Games TiMi Studio was invited by the United Nations Environment Programme (UNEP) to join the **Playing for the Planet Alliance**. The studio announced a series of initiatives to work with the industry and use the power of gaming to raise public awareness of environmental protection and achieve carbon neutrality. Since that promise in 2021, the environmental content in TiMi games has reached 110 million players and helped them better understand climate challenges. In collaboration

with UNEP and Tencent Institute of Games, TiMi also held an environmental track under the Tencent Next Idea Youth Game Developer Championship, reaching more than 300 universities around the world. Promoting diverse, positive social values in our games is something we have been committed to for a long time, and we will continue to explore using games to raise awareness of low-carbon concepts.



Playing for the Planet Alliance

On the foundation of spreading low-carbon knowledge, turning the value of emission-reduction into incentives for the public is also effective. Carbon incentive mechanisms will be an important tool to advocate for the low-carbon lifestyle. In the exploration of Tencent carbon incentive mechanisms, we pay more attention to scientific methods of emissions-reduction accounting. In December 2021, Tencent and the Shenzhen Municipal Bureau of Ecology and Environment jointly launched the **Low-Carbon Planet** Mini Program, which was the first authorized carbon incentive mechanism pilot product in Shenzhen as well as Tencent's first foray into this field. In this Mini Program, everyone gets a small planet of their own. By taking public transportation and adopting other low-carbon behaviors in real life, people accumulate a carbon score that can help the evolution and growth of their virtual planet. Low-carbon travel was the first scenario launched. Based on the "Work

Plan for Construction of the Shenzhen Carbon Incentive Mechanism System" and the "Shenzhen Low-Carbon Public Travel Carbon Incentive Mechanism Methodology", we scientifically calculated the amount of emissions reduced by people taking the bus and subway. In the future, Low-Carbon Planet will cover more life scenarios and develop a more complete methodology for the virtual low-carbon planet, thus encouraging more people to adopt a lower-carbon lifestyle. Low-Carbon Planet marked the beginning of Shenzhen's effort to account for and collect low-carbon statistics among users through application scenarios. It is an important start to building an ecosystem of carbon incentive mechanisms.

Our platform has created a convenient way for people to understand and adopt eco-friendly and low-carbon habits. Through **Tencent's public interest platform**, 24.58 million people have donated more than 460 million yuan, helping 2,583 nature-conservation projects. At the same time, to advocate a low-carbon lifestyle, the platform also launched an online program called "Walk Together" to motivate users to walk by forming teams, competing against each other, and fundraising. In 11 months, a total of 11.37 million users took 2.5 trillion steps.



"Low-Carbon Planet" Mini Program page

Our current version of the Low-Carbon Planet Mini Program encourages users to lead a low-carbon life. This is only a starting point. We believe that there is more room for exploration on the consumer side, especially around building a circular economy and promoting low-carbon products and services. While passing on ideas and knowledge, we will also continue to explore and create convenient tools that encourage low-carbon habits by consumers and to jointly create a new eco-friendly and low-carbon lifestyle.





■ Digitalization facilitates low-carbon transformation of industries

Tencent strives to embrace industry and contribute to the real economy through digitalization. We believe that digitalization will play an important role in the process of carbon neutrality. Low-carbon innovation and optimization of the industrial structure is a complicated process. It requires different aspects of innovation, including new technologies, efficiency improvement, and evolution of management models. Each step is full of challenges. As a technology enterprise, digitalization is where we can play the biggest role in low-carbon transformation. Based on our years of experience in the internet industry, there is no doubt that digitalization plays a significant role in improving efficiency. As more enterprises begin to manage their own carbon emissions and join in carbon trading, digital technology will play an indispensable role in the calculation and management of carbon assets, as well as the sharing of emissions-reduction methods and paths across different industries. The low-carbon transition will also increase demand for automation, the Internet of Things, advanced data analysis, and artificial intelligence. Based on these considerations, we have started exploring and facilitating the low-carbon transformation of the industrial sector.

Just like every enterprise needs a financial system, a clear corporate carbon ledger is indispensable. A measurement, reporting, and verification (MRV) platform for corporate carbon emissions is becoming more and more important. In creating an **MRV platform for corporate carbon emissions**, digitalization can play an important role. Carbon emissions are measured in an iterative manner, and multiple data sources can be used to improve data accuracy. Reporting and disclosure requirements are complex and diverse, and software can help easily complete all kinds of disclosure requirements. Data systems can provide semi-automatic verification. We are also exploring the use of blockchain and other cutting-edge technology to provide effective solutions for issues like difficulty data collection, large workloads, and missing or lost data. This ensures that the entire carbon path is traceable and makes it easier for managers and staff to stay

informed of real-time carbon emissions, conduct analysis, and make decisions.

Digitalization can optimize the intelligent management of different elements and systems by adding functional modules, and significantly improve resource efficiency from the perspective of energy consumption optimization and reliability. In terms of architecture, Tencent launched the **Smart Building Management Platform**, which is an Internet of Things operating system deeply adapted for smart building scenarios. The system was deployed in the comprehensive energy-management transformation of the headquarters of China Power Investment Corp. (CPI Group) in 2020. Working with CPI Group's own intelligent resource-management platform, it helped to realize the digital management of all digital and physical processes and elements. For instance, it created

an integrated microgrid including rooftop, ground, and curtain wall solar cells, as well as wind. At the same time, power generation, storage, and usage are analyzed pushed to users through desktops and Mini Programs. In this way, we can explore intelligent building solutions to help the innovative development of distributed energy in the region.

In terms of industrial campuses, Towngas Energy and Tencent Cloud built a zero-carbon campus intelligent energy platform based on **Tencent Cloud's Energy Studio**. Tencent Cloud's expertise in digital technology, combined with Towngas Energy's comprehensive energy development and management experience, resulted in a more comprehensive and superior digital energy solution. The platform supports intelligent energy-data management analysis, prediction, and optimization to provide clear carbon emissions reports and accurate and efficient carbon management. In the future, the platform can also flexibly expand to include energy-efficiency management, energy trading, carbon trading, and other applications to help industrial campuses accelerate their zero-carbon development.

Companies' low-carbon operation cannot be achieved without efficient and convenient **online office tools**. We have launched Tencent Meeting/VooV, WeCom, Tencent Docs, and WeCard to help enterprises promote paperless offices, effectively solve the problem of long-distance communication, and significantly reduce business travel needs for all industries. In December 2019, we launched our Tencent Meeting/VooV video conferencing product. Since the launch of the product, it has resulted in the cumulative reduction of more than 15 million tons of carbon emissions.

When looking at broader human society, Tencent has been exploring how digitization and AI can help solve challenges in food, energy, and water for many years. David Wallerstein, Chief eXploration Officer of Tencent, first proposed the initiative of **AI for FEW** at a seminar co-hosted by UN-Habitat and Tencent in April 2019. The idea is to use artificial intelligence to tackle the three global challenges of food, energy, and water to help achieve sustainable development goals. Since then, Tencent has explored new frontiers in how AI can be applied to areas such as agriculture, thermal power, and energy savings. For example, smart thermal power plants can enable preventive maintenance of equipment, improve equipment reliability, reduce boiler fuel costs, and improve power-generation efficiency. David Wallerstein's book, *AI For Few*, elaborated on these theories and revealed behind-the-scenes stories of how Tencent helped agriculture through the power of AI. At the same time, in the context of climate change, climate prediction is an important means to improve adaptability. Tencent is working with the startup Reask to explore AI-powered, high-order climate prediction models to optimize disaster models and climate analysis methods and help enterprises and society better cope with the risks brought by climate change.

Along with the rapid development of digital products, demand for digital infrastructure is also increasing across society. The transition of traditional IT infrastructure to cloud computing has improved the efficiency of resource utilization and offered another potential avenue to reduce emissions. Moreover, the variety of measures Tencent has taken to reduce emissions at our data centers has helped optimize energy consumption and increased the proportion of renewable energy.

These measures have not only helped progress towards carbon neutrality in Tencent's own operations and supply chain, but have also provided **low-carbon computing power** and helped our clients reduce their own carbon footprints.

As we travel down the road of carbon-neutral transformation, we believe digitalization has a lot to offer, with many promising areas worth exploring. For example, in order to further improve efficiency and optimize energy consumption, automation will play a more important role in industry. In the energy system of the future, solar, wind and other

alternative energy sources are inherently random, intermittent, and unstable. Microgrids, energy storage, and other fields are also developing rapidly. Digitalization can help contribute to building a more flexible and intelligent energy system. As more and more enterprises undergo the low-carbon transition, digitalization will see further developments, such as more accurate monitoring of carbon emissions and more precise management of energy consumption and carbon assets. We will work closely with internet partners in various industries to explore how digitalization can facilitate the low-carbon transformation.



■ Promoting sustainable social value innovation

Tencent has long been involved in charitable works. In 2007, we established the Tencent Charity Foundation. Over the years, we have found that traditional approaches to charity have only a limited impact on many major social issues. By bringing digital technology, innovative models, and a business perspective, we hope that sustainable innovation can truly solve social issues at scale. In 2021, Tencent established the Sustainable Social Value Organization (SSV) with "Tech for Good" as its mission. The SSV is tasked with exploring high-quality and sustainable action plans through innovations in technology, products, and approaches. It shares social values and enhances social well-being, which is also the organization's primary goal.

Carbon neutrality needs such exploration. Carbon neutrality is not only an environmental issue but also a development issue. We face two challenges: to quickly decarbonize industry and society, and also rapidly create, develop, and deploy emerging technologies. Under these circumstances, commercial viability is particularly important. The transition to carbon neutrality can only be achieved if high-quality, low-carbon products and technologies are mature and commercially viable. Within our SSV organization, we established a Carbon Neutrality Laboratory to accelerate the innovation and development of low-carbon technology, products, and models. In addition, we cannot overlook the fact that the low-carbon transformation will be accompanied by social and economic changes, including ones touching on survival and development, fairness, and justice. Therefore, Tencent also integrates carbon neutrality with its rural revitalization and other initiatives, aiming to focus on different social groups involved in the low-carbon transformation and on social development from a broader and long-term perspective.



Focus on disruptive technologies Facilitate development of low-carbon, zero-carbon, and negative-carbon technologies

We are well aware that the low-carbon transformation of society cannot just rely on changes in public awareness and the efficiency improvements brought by digitalization. It also requires a variety of disruptive and innovative physical technologies. Technological innovation is playing a decisive role in every field, from cleaner power systems and more renewable energy, to innovative industrial processes, electric transportation, and eco-friendly buildings. This includes the further iteration of existing commercial technologies, for example, speeding up commercialization of alternative energy solutions. It also includes new technologies that have not been widely used in the market, such as production of hydrogen through electrolysis, electrochemical energy storage, and so on. Meanwhile, for many scenarios and industries with high emissions-reduction costs, negative-carbon technology will also be indispensable. These are all areas that we will continue to focus on.

In terms of exploring and using emerging low-carbon technologies, Tencent embraces the spirit of openness and sharing when it comes to the various low-carbon technologies in our own data centers, buildings, and campuses. We also pay close attention to innovative technologies emerging from all corners of society and promote the development of emerging technologies through pilot projects, funding, and implementation.

For example, Tencent's data center technology has undergone four generations of innovation and PUE reduction, and we have opened our research results and patents to promote emissions reductions across the industry. We have built our data centers in locations where hydropower is widely available, hoping to drive industrial digitalization and a positive cycle of low-carbon transformation in these areas. In the broader realm of energy reduction, renewable energy, emissions reduction, and carbon offsets, we also use our infrastructure projects to explore the use of alternative-energy power generation, energy storage, microgrid clusters, the internet of energy, low-carbon and eco-friendly materials, and carbon sinks. As we gradually become carbon neutral, we also help create more opportunities to apply innovative low-carbon technologies.

We also pay close attention to the development of various innovative technologies and provide diverse resources to support the efforts of industries, universities, and research institutes to accelerate the deployment and application of low-carbon technologies through scientific research, pilot demonstrations, and innovative business models. For example, Carbon Capture, Utilization, and Storage (CCUS) is a key technology system and is also one of the core pathway to achieving carbon neutrality in hard-to-abate industries. Tencent is working with the Icelandic company Carbfix to promote the sequestration of CO₂ through mineralization, a relatively low-cost and widely available technology. The basic principle of this technology (as shown in the figure) is to dissolve CO₂ in water under a certain pressure and inject it into underground rock layers with high reactivity and high porosity to achieve faster solidification of the CO₂. Tencent is promoting a

pilot project for this technology in China, which is the first CO₂ mineralization sequestration pilot in Asia.

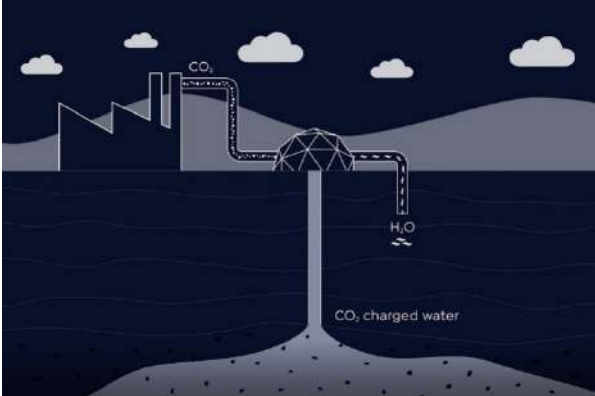


Image via Carbfix website

In addition to technologies to reduce industrial emissions and carbon, nature-based solutions (NBS) are also an important path to mitigate and adapt to climate change. Among them, forestry carbon sink projects have been successfully practiced for many years, and there are a lot of projects underway to tap the potential of the ocean and farmland carbon sinks as well. The carbon sink potential of natural systems is being continuously tapped through research and commercialization. For example, the ocean offers vast carbon sink potential while also offering the benefits of biodiversity protection, disaster prevention and mitigation, as well as significant

additional social, economic, and environmental benefits. We are already planning to partner with the State Key Laboratory of Marine Environmental Science of Xiamen University to consolidate our understanding of the marine carbon cycle, promote ecosystem protection and restoration, develop marine carbon-sink measurement methodology, and promote carbon sink trading.

Broader innovation of social value

In our understanding, carbon neutrality is by no means an independent process. To the contrary, carbon neutrality will have a profound impact on different industries and different people. Tencent's SSV organization continues to explore social value innovation in rural revitalization, fundamental science, FEW (food, energy, water), and educational equality. Carbon neutrality is not only one of the SSV's key social values, but also has strong synergies with other social values that we focus on. Creation of broader social value is also an important consideration in the process of going carbon neutral and as we strive to help the communities we care about to benefit from this historic transition.

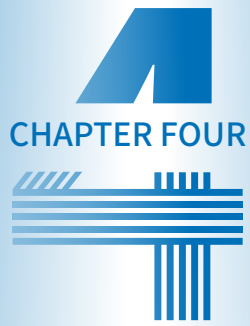


In our past work and exploration, we have also seen the deep integration of the low-carbon transformation and sustainable social value innovation, especially in rural revitalization. Distributed alternative-energy projects in rural areas can not only provide clean energy but also increase local incomes through business models that can commercialize its environmental and emissions-reducing attributes. In nature-based solutions (NBS) projects, ecological protection and restoration are often accompanied by helping local residents build new sustainable livelihoods. The spread of agricultural emissions-reduction technologies also has the potential to help farmers increase their incomes and improve their living standards by guiding consumers to buy low-carbon products and achieving emissions-reduction certifications. We have begun implementing a number of projects related to rural low-carbon transformation and exploring different

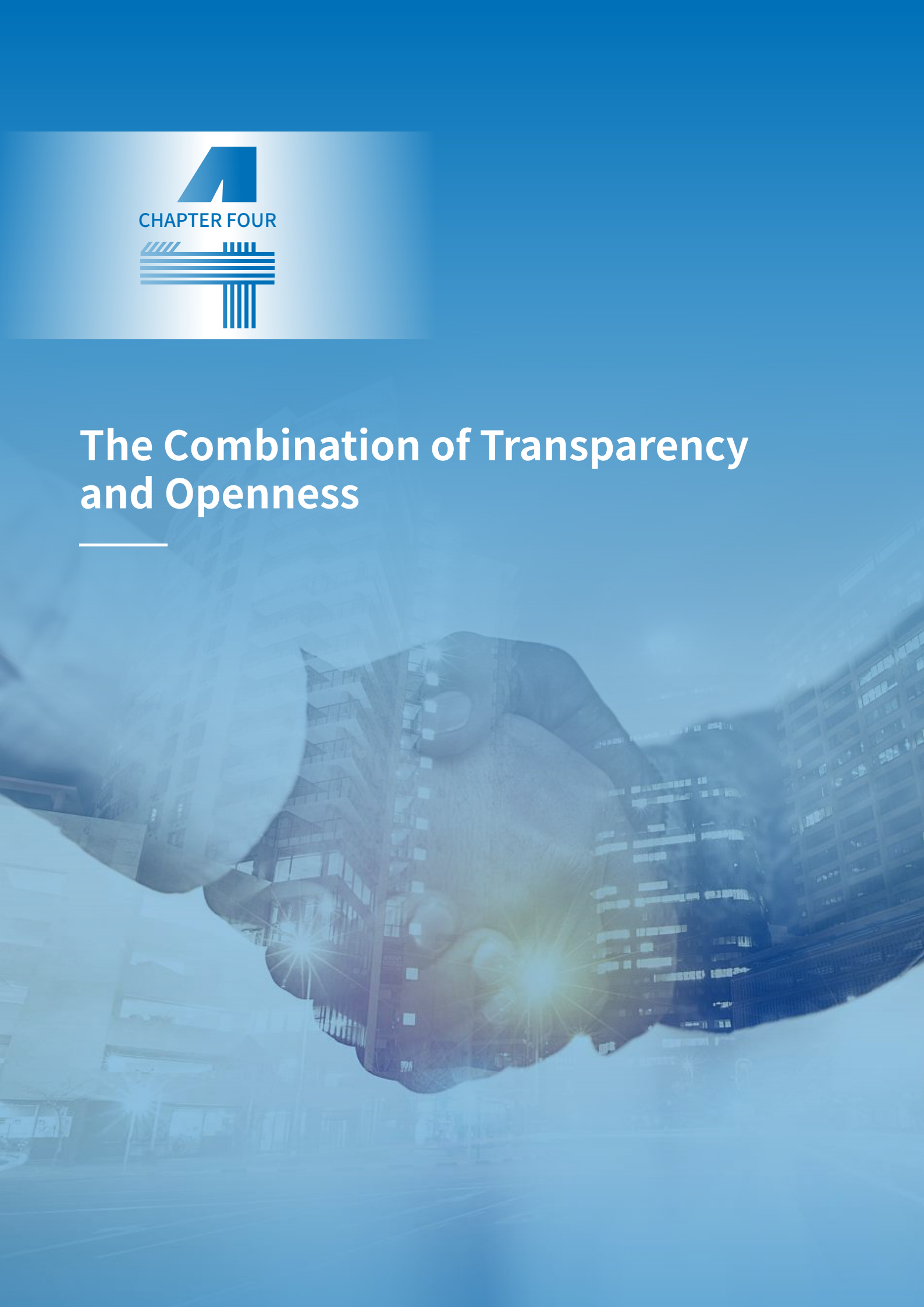
ways to combine carbon neutrality with rural revitalization. We look forward to contributing to rural development while advancing the process of carbon neutrality.

We firmly believe that advancements in low-carbon technology cannot be separated from the development of fundamental science. Since the Xplorer Prize was launched by the Tencent Foundation in 2018, it has recognized 150 outstanding young scientists, including many from the fields of energy, environmental protection, chemical new materials, advanced manufacturing, and transportation. They are engaged in research that is closely connected to the low-carbon transformation. We also continue to explore more ways of supporting fundamental science, such as through practical applications, commercialization, and other means.





The Combination of Transparency and Openness



■ Transparent Action



Open and transparent emissions-reduction targets not only show Tencent's determination and attitude but are also an effective means of self-supervision. This is Tencent's first Carbon Neutrality Target and Roadmap Report. In the future, we will disclose our emissions-reduction progress through our annual Environment, Society, and Governance (ESG) Report.

We have joined the Science-Based Targets Initiative (SBTi) and are strictly following the relevant process to submit our emissions-reduction targets to the Science-Based Targets Committee for review. Under the support and guidance of the committee, we will disclose our progress and work towards the achievement of our targets so as to help meet the 1.5° C target of the Paris Agreement.

We also plan to join the Renewable Energy 100 (RE100). RE100 is a global renewable energy initiative led by the Climate Group and the Carbon Disclosure Project. Participating companies must publicly commit to achieve a 100% renewable electricity usage between 2020 and 2050 and report on progress annually.

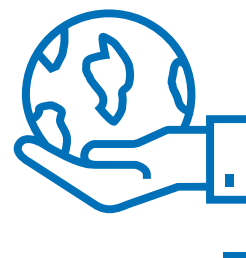
■ Open Collaboration

The target of carbon neutrality has a long timeline and poses a great challenge. No one party can accomplish it independently. For enterprises, achieving carbon neutrality in their operations and supply chains is inseparable from the participation of their upstream and downstream partners. For society, achieving this goal requires the joint participation of government, industry, academia, and research. Therefore, we believe that to achieve carbon neutrality, we cannot lose a single one of these partners. In the process of exploring and aggregating low-carbon technologies and promoting carbon neutrality, we have established extensive contacts with government departments, scientific research institutions, universities, enterprises, and other partners. At the same time, through a series of alliances and projects, domestic and international partners from all sectors are invited to jointly build a carbon-neutral ecosystem.

In order to help more companies obtain or use open-license technologies for free, improve energy efficiency, and reduce carbon emissions, the Tencent SSV Carbon Neutrality Laboratory leads the carbon neutrality professional committee at the Internet+ Development Association of China. The expectation is that this committee will help establish an open access patent technology organization to make it easier for enterprises to use low-carbon technologies for free. We hope to promote the development and application of low-carbon technologies and help achieve peak carbon emissions and carbon neutrality. We hope that through domestic applications we can continue to expand our international and domestic impact. By jointly building a public-interest patent pool based on social responsibility and this broader mission, we can share patents and technology to give back to society.

In order to promote the close integration of social decarbonization and digitalization and jointly build a carbon-neutral ecosystem, Tencent Start Innovation Ecosystem has launched the Tencent Carbon Neutrality Accelerator, which aims to help start-ups in the carbon-neutral field grow rapidly and contribute to sustainable development. Tencent's Carbon Neutrality Accelerator is recruiting for disruptive start-ups around the world, focusing on three key areas including using AI to save energy and reduce emissions, carbon neutrality, and carbon trading. It will provide supporting resources such as technology, scenarios, business opportunities, and funding. In the field of carbon neutrality, Tencent looks forward to working with leading innovative companies to create industry solutions and promote their commercialization.

In the area of scientific research cooperation, as a technology-driven enterprise, the Tencent SSV Carbon Neutrality Lab is actively exploring various forms of collaboration with universities and research institutes, continuously supporting carbon-neutral innovation and digital practices, and is promoting the transformation of industry, academia, and research. Taking the carbon neutrality of Tencent's own operations and supply chain as the application scenario, it will cultivate strength for industrial digitalization and low-carbon development and use technology to help achieve low-carbon transformation.



Epilogue



Carbon neutrality involves comprehensive changes in production and lifestyle. We believe that technological progress is important to achieving our carbon neutrality target. We fully understand the high degree of uncertainty in technological development, insist on proactive exploration and courageous trial, and strive to contribute to the rapid development of low-carbon technologies.

Carbon neutrality involves the comprehensive transformation of economic and social development. We believe that participation by all stakeholders is an important guarantee to achieving carbon neutrality targets as scheduled. We will uphold an open and cooperative attitude and actively cooperate with all parties to jointly build a low-carbon ecosystem and create an atmosphere conducive to the low-carbon transformation of society.



Carbon neutrality is a far-reaching transition and a complex and lengthy process that requires unremitting efforts to help change happen. We believe that to achieve the goal of carbon neutrality, we must be rooted in the present and take rapid and scientific actions. We must also look to the future and adhere to a long-term and macro-level strategy. Tencent will demonstrate patience and firmness and make practical contributions to the carbon-neutral transformation of the nation.



Appendix



Glossary of Key English Abbreviations

PUE: Power Usage Effectiveness

GHG Protocol: Greenhouse Gas Protocol

LEED: Leadership in Energy and Environmental Design

MRV: Measurement, Reporting, and Verification

FEW: Food, Energy, Water

CCUS: Carbon Capture, Utilization, and Storage

NbS: Nature-Based Solutions

SBTi: The Science Based Targets initiative

Source of emission factors

The sources of emission factors for this carbon inventory include:

The IPCC 2006 Guidelines for National Greenhouse Gas Inventories and the Fifth Assessment Report issued

- by the United Nations Intergovernmental Panel on Climate Change (IPCC)

The "Guidelines for Accounting Methods and Reporting of Corporate Greenhouse Gas Emissions" issued

- by the Ministry of Ecology and Environment of China, and the average carbon dioxide emission factor of each provincial power grid

Refer to the emission factors disclosed by various global channels in related fields, such as UK

- Government GHG Conversion Factors for Company Reporting; EPA Emissions & Generation Resource Integrated Database, etc.

Statement

This report is an elaboration of Tencent's carbon neutrality target and action plan, which contains forward-looking statements. The forward-looking statements are uncertain, and many factors may cause actual results to differ from those stated in the report.

Tencent