



Tsinghua University School of Economics and Management
Carbon Footprint Accounting Report (2023)



SEM
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Preface

Climate change is one of the most pressing challenges confronting humanity in the twenty-first century. The Paris Agreement was signed in 2016 by 178 nations worldwide, with the overarching aim of limiting the global average temperature increase to 2 degrees Celsius above the pre-industrial levels and striving to keep the increase within 1.5 degrees Celsius.

Responding to climate change is a crucial tool in advancing China's high-quality economic development and ecological civilization. It represents a significant domain for engaging in global governance and upholding multilateralism. "China will scale up its Intended Nationally Determined Contributions by adopting more vigorous policies and measures. We aim to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060," Chinese President Xi Jinping said at the general debate of the 75th session of the United Nations General Assembly via video on September 22, 2020. This commitment to peak carbon dioxide emissions and achieving carbon neutrality is a natural course for China to address pressing resource and environmental challenge. This embodies China's solemn pledge to forge a shared future for mankind.

In order to implement the national "dual-carbon" goals, Tsinghua University School of Economics and Management (Tsinghua SEM) has voluntarily embarked on the annual carbon footprinting and reporting process. This initiative aims to accurately assess carbon emissions, commit to carbon neutrality, and formulate a plan to achieve this goal. In this report, Tsinghua SEM endeavors to understand and document its greenhouse gas emissions, explore methods for low-carbon and green development, and ultimately achieve its net-zero emissions goal by 2035.



I. Net-zero plan and goals



1. School profile

Established in 1984, Tsinghua SEM is driven by a mission "to advance knowledge and cultivate leaders for China and the world." The school aspires "to be a world-class school of economics and management" and holds "integrity, dedication and respect" as its core values. Over the past 40 years, Tsinghua SEM has been at the forefront of talent cultivation, scientific research, social impact and international collaboration, and striving relentlessly toward its goal of achieving excellence in economics and management education.

Tsinghua SEM comprises seven departments: Accounting; Economics; Finance; Innovation, Entrepreneurship and Strategy; Leadership and Organization Management; Management Science and Engineering; and Marketing. These departments encompass four first-level disciplines: theoretical economics, applied economics, business administration, and management science and engineering. Additionally, Tsinghua SEM hosts the Secretariat of the China National MBA Education Supervisory Committee.

2. Background and goals

Climate change has emerged as a serious global challenge. In response, the international community has committed itself to limiting the increase in global average temperature to less than 2 degrees Celsius and striving to limit it to less than 1.5 degrees Celsius as outlined in multilateral agreements such as the Paris Agreement. Nations worldwide have implemented carbon emission reduction policies to foster economic and social transition towards low-carbon sustainable development.

The Chinese Government has prioritized climate change, actively engaging in global climate governance and setting forth the "dual-carbon" goals, striving to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060. This commitment underscores China's highly responsible stance on global environmental protection and charts a path for sustainable economic and social development. To

realize these goals, the Chinese Government has formulated a series of domestic dual-carbon policies, including restructuring the energy sector, promoting clean energy, enhancing energy efficiency, developing a circular economy, and strengthening ecological protection and restoration.

Tsinghua University has taken proactively steps and made notable advancements in carbon neutral research areas, such as zero-carbon energy generation, new electric power systems, zero-carbon transportation, and zero-carbon buildings. On September 22, 2021, Tsinghua University officially established the Tsinghua University Institute for Carbon Neutrality (ICON, Tsinghua University), integrating the university's multi-disciplinary strengths and scientific research foundation to promote collaborative innovation among industry, academia and research institutes, and contributing to the country's goal of achieving "dual-carbon" goals. In January 2024, Tsinghua University set up the Campus Carbon Neutral Planning Working Group to push forward the university's efforts to halt the growth of carbon output and achieve carbon neutrality.

Tsinghua SEM, as a leading school of economics and management in China, has conducted thorough research and analysis on climate change issues, international carbon emission policies, China's dual-carbon commitment and domestic dual-carbon policies. The school believes that achieving carbon neutrality is crucial for addressing climate change, fulfilling social responsibility and advancing sustainable economic and social development.

In alignment with the national goals to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060 and taking into consideration of the current situation of energy consumption and carbon emissions, the future development plan of the school, and the technological and economic feasibility, Tsinghua SEM has set the target year for achieving net-zero carbon emissions as 2035. This means that, **Tsinghua SEM is committed to achieving carbon neutrality by 2035, in conjunction with the university's campus carbon neutrality plan.**



3. Path and plan of implementation

To achieve carbon neutrality by 2035, Tsinghua SEM will implement practical and effective measures across various fronts. In regards to energy use, Tsinghua SEM will actively promote the adoption of clean energy while gradually phasing out traditional fossil energy. Additionally, the school will enhance energy management, striving to improve energy efficiency and minimize waste through the implementation of intelligent and refined energy management systems.

In addition to addressing energy use, Tsinghua SEM will implement low-carbon initiatives in office operations and travel practices. The school will promote green office practices, advocate for electronic documentation and virtual meetings to reduce paper usage. Furthermore, Tsinghua SEM will encourage students and faculty to adopt low-carbon travel methods, such as cycling, walking or using public transportation, while discouraging the use of private vehicles, thereby contributing to a reduction in carbon emissions.

At the same time, Tsinghua SEM will play an active role in researching, developing and implementing international and domestic carbon emission policies. By contributing Chinese expertise to global climate governance efforts, the school will offer scientific insights and intellectual support for governmental decision-making processes. Tsinghua SEM will bolster collaboration and exchange initiatives with domestic and international universities, research institutions, and enterprises to collectively advance the development and adoption of low-carbon technologies. Additionally, the school will also enhance cooperation and communication with various sectors of society to jointly advocate for the implementation of dual-carbon policies across societal domains.

In conclusion, Tsinghua SEM, leveraging its extensive research on climate change and proactive engagement with international and domestic carbon emission policies, is actively pursuing the objective of carbon neutrality. Tsinghua SEM is committed to

furthering its efforts, accumulating experience and advancing its research. The school aims to make significant contribute to the collective pursuit of a shared future for humanity and the realization of green, sustainable development.



II. Methodology



1. Measurement scope

A carbon footprint refers to the cumulative emissions of carbon dioxide (CO₂) and other greenhouse gases (GHG) directly or indirectly produced by individuals, organizations, events or products within a specific timeframe, usually measured in terms of carbon dioxide equivalent (CO₂e). It serves as a critical metric for evaluating the impact of climate change, indicating the direct or indirect influence of human activities on the environment.

The carbon footprint of an organization encompasses the total volume of greenhouse gas emissions generated by an entity (e.g., school or business) during its operations. These emissions can stem from the organization's direct energy consumption (e.g., electricity and heating) as well as indirect activities, such as employee commuting, supply chain management and more.

2. Measurement methodology

The methodology for measuring the carbon footprint relies on activity data and emission factors. Initially, organizational activity data, such as energy consumption, vehicle mileage, and material usage are gathered. Then, these activity data are multiplied by the corresponding emission factors (which represent GHG emissions per unit of activity data) to determine the total GHG emissions.





III. 2023 Carbon footprint



1. Organizational boundary

The organizational boundary for carbon footprint accounting is established based on "Operational Control" in accordance with the ISO14064 standards and with reference to the GHG Protocol. The carbon footprint calculation for Tsinghua SEM in 2023 includes the carbon emissions from the operation of the school's teaching and research office in Beijing as well as the office space outside Beijing (such as the Tsinghua SEM Shenzhen Campus) and the activities of relevant personnel.

2. Reporting timeframe

This report encompasses carbon footprint data for the year 2023, spanning from January 1, 2023 to December 31, 2023. It serves as a real-time quantitative reference for guiding Tsinghua SEM's future sustainability development initiatives.

Tsinghua SEM bears clear responsibilities in carbon footprint accounting, with a dedicated accounting team tasked with data collection, calculation, and reporting. This report is valid until revised or revoked.

3. Selection of emission factors

For specific source categories, carbon emissions are typically computed based on carbon emission factors, such as those for electricity and heat. These emission factors are sourced from official government documents and standards, authoritative findings from industry experts and professional organizations, as well as research reports and literature. To uphold the credibility of the carbon footprint measurement results, all emission factors used in this report are all taken from government documents and data released by standards at various levels.

4. Calculating GHGs

According to the GHG Protocol, GHG emissions will be classified into Scope 1 (direct emissions), Scope 2 (indirect emissions), and Scope 3 (other indirect emissions).



Scope 1 encompasses emissions from Tsinghua SEM's direct fuel combustion. Scope 2 consists of emissions from electricity and purchased heat consumed by Tsinghua SEM. Scope 3 includes emissions from other non-direct sources such as business travel, municipal tap water, and other indirect emission sources.

(1) Scope 1 (direct emissions)

Tsinghua SEM's Scope 1 emission source is a fuel car. Based on its gasoline consumption in 2023, Tsinghua SEM's emissions in 2023 is 0.73 tons of CO₂.

(2) Scope 2 (indirect emissions)

Tsinghua SEM's Scope 2 emission mainly comprises carbon emissions generated by purchased electricity and purchased heat. The carbon emissions from purchased electricity are computed based on the power consumption of Tsinghua SEM's Beijing teaching and research office and the office outside Beijing (Shenzhen campus). Purchased heat is only present in the teaching and research office space in Beijing, centrally supplied by the heating station of Tsinghua University. To ensure the accuracy, we collected data on natural gas and municipal tap water consumption at the heating station in 2023. Using the ratio of Tsinghua SEM's building area to Tsinghua University's heating building area, we calculated Tsinghua SEM's purchased heat carbon emissions. The final calculation of Tsinghua SEM's Scope 2 emissions in 2023 is 4736.46 tons of CO₂. Refer to the table below for detailed breakdown data.

Table 1 Tsinghua SEM's Scope 2 Carbon Footprint in 2023

Scope	Consumption category	Carbon emissions (tons)	Total carbon emissions (tons)
Scope 2	Electricity	3267.20	4736.46
	Heat	1469.26	



(3) Scope 3 (other indirect emissions)

Tsinghua SEM's Scope 3 emissions primarily consist of carbon emissions generated by business travel (planes, trains and cars), municipal tap water and printing paper usage. The carbon emissions from business travel are calculated based on the travel records of Tsinghua SEM faculty and staff, considering three modes of transportation: planes, trains, and cars. Additionally, the carbon emissions from municipal tap water and printing paper are computed based on the consumption of these resources at Tsinghua SEM's Beijing teaching and research office and the office outside Beijing (Shenzhen campus). The final calculation for Tsinghua SEM's Scope 3 emissions in 2023 is 1413.32 tons of CO₂. Refer to the table below for detailed breakdown data.

Table 2 Tsinghua SEM's Scope 3 Carbon Footprint in 2023

Scope	Consumption category	Carbon emissions (tons)	Total carbon emissions (tons)
Scope 2	Municipal water	3.84	1413.32
	Car travel	206.24	
	Train travel	10.72	
	Air travel	1153.64	
	Paper	38.88	

(4) Summary

Based on the aforementioned calculations, the total carbon emissions of Tsinghua SEM in 2023 was 6150.52 tons of CO₂, of which the emissions of Scope 1 was 0.73 tons of CO₂, Scope 2 is 4736.46 tons of CO₂, and Scope 3 is 1413.32 tons of CO₂. Detailed breakdown of data is provided below.

Table 3 Tsinghua SEM's Carbon Footprint in 2023

Scope	Consumption category	Carbon emissions (tons)	Total carbon emissions (tons)
Scope 1	Gasoline for owned vehicles	0.73	0.73
Scope 2	Electricity	3267.20	4736.46
	Heat	1469.26	
Scope 2	Municipal water	3.84	1413.32
	Car travel	206.24	
	Train travel	10.72	
	Air travel	1153.64	
	Paper	38.88	
Total			6150.52

From the perspective of GHG accounting scope, Tsinghua SEM's carbon footprint in 2023 is primarily composed of Scope 2 (indirect emissions) and Scope 3 (other indirect emissions) carbon emissions. Specifically, Scope 2 carbon emissions account for the highest share, representing 77.01%, followed by Scope 3 carbon emissions with a share of 22.98%. Scope 1 carbon emissions contribute the smallest proportion, accounting for only 0.01%. Refer to the pie chart below for a visual representation of these proportions.

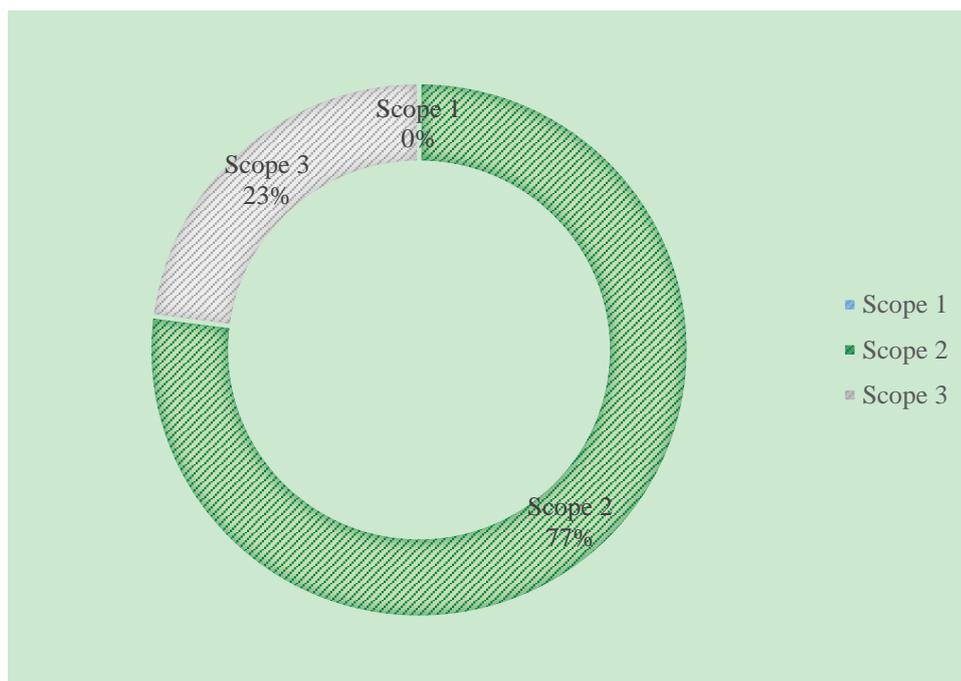


Figure 1 Tsinghua SEM's Carbon Footprint Scale Structure in 2023

From the perspective of consumption categories, Tsinghua SEM's carbon footprint in 2023 primarily comprises purchased electricity, purchased heat and air travel. Purchased electricity represents the highest share of carbon emissions at 53.12%, followed by purchased heat at 23.89%, and air travel at 18.76%. Together, these three categories account for 95.77% of Tsinghua SEM's total carbon emissions. The remaining consumption categories contribute less than 5% of the total carbon emissions. Refer to the pie chart below for a representation of these proportions.

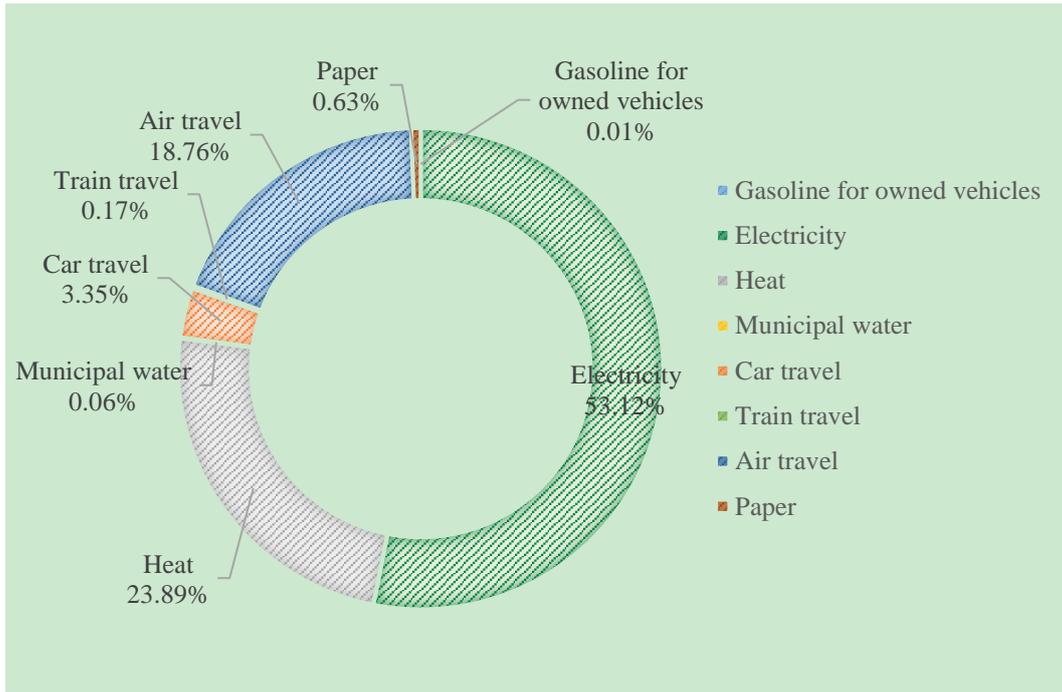


Figure 2 Carbon Footprint Scale Structure in 2023(Consumption Category)

5. Managing data quality

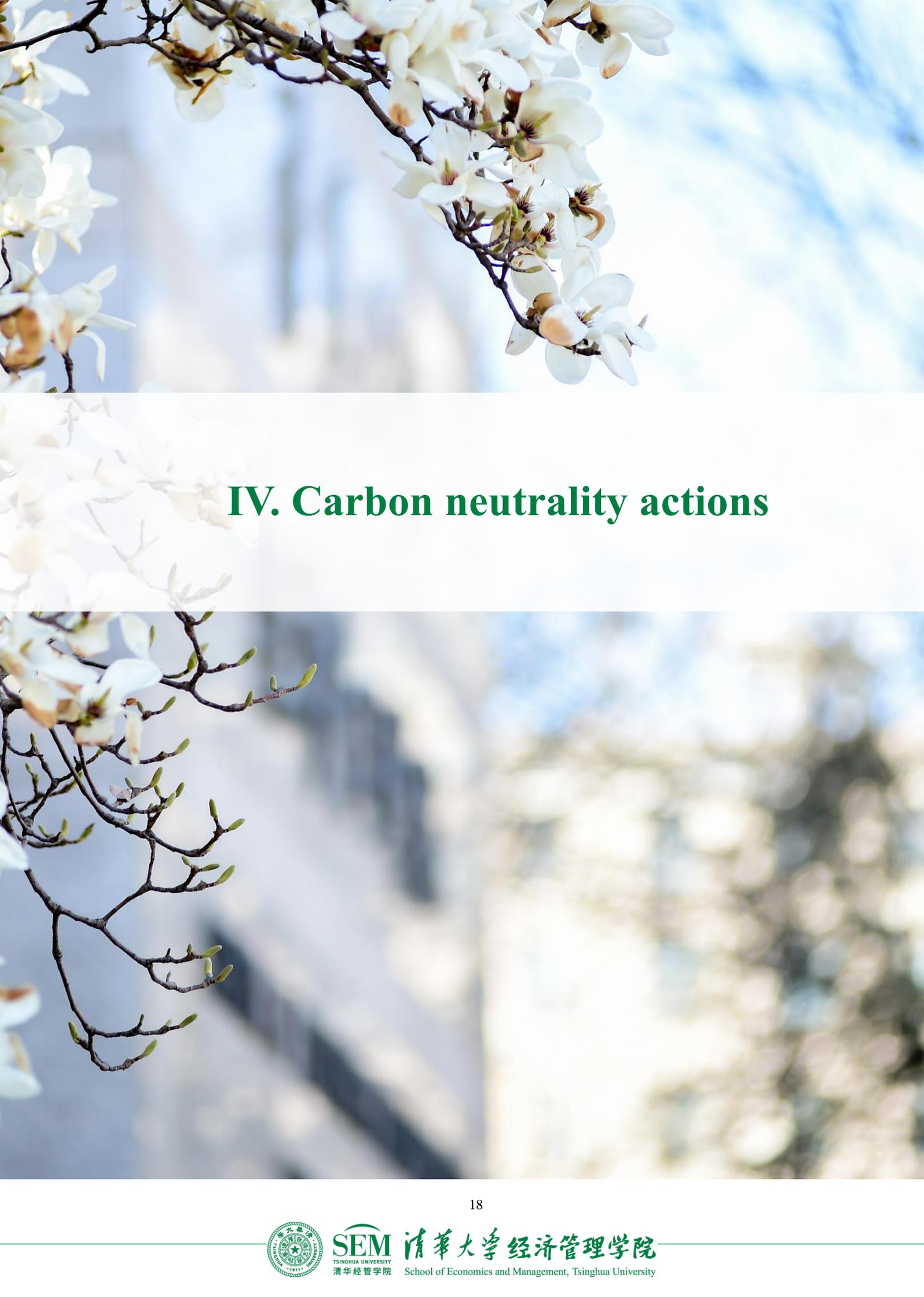
This GHG emissions report adheres to the ISO14064 standards and upholds principles such as relevance, completeness, consistency, transparency, and accuracy. Our data quality management comprises the following components:

Quality control staff: They oversee coordination between internal departments and maintain relationship with third parties, including local authorities and business projects.

Quality management: This team is responsible for establishing guidance and conducting the collection of specialized data that requires a high level of accuracy. They work closely with emission sources in accordance with quality checklist.

Ordinary quality check: This team collects and manages large amount of data, creating an emission model that identifies and corrects anomalies and errors. The model is to ensure the accuracy of emission data.





IV. Carbon neutrality actions



1. Utilizing disciplinary strengths and exploring academic frontiers

Tsinghua SEM prioritizes China's economic development, particularly in fostering a healthy and sustainable manner. Academic research on topics such as green economy, business ethics, corporate social responsibility and sustainable development has remained a focal point for the faculty. Between 2020 and 2021, faculty members published a total of 75 papers, monographs and cases related to the sustainable development goals (SDGs) in both domestic and international journals and academic conferences. Furthermore, Tsinghua SEM has established research centers closely aligned with low-carbon sustainable development. The Research Center for Green Economy and Sustainable Development of Tsinghua University was founded in March 2015. The Institute of Global Development of Tsinghua University was founded in 2016. Tsinghua SEM is dedicated to conducting cutting-edge research and delving into subject pertaining to carbon neutrality. The school remains focused on investigating new technologies, methods and policies associated with carbon neutrality to offer more scientific and innovative support for China's dual-carbon strategy.

2. Fulfilling the responsibilities of a think-tank and making public suggestions

Tsinghua SEM has been actively organizing and planning academic activities centered on the goals of "dual-carbon", such as the "China Carbon Neutrality 50 Forum" and the "China Carbon Neutral Economic Policy" seminar, aimed at providing breakthrough ideas and policy suggestions for realizing the dual-carbon strategy. In May 2021, Tsinghua SEM, in collaboration with the Institute of Environmental Planning of the Ministry of Ecology and Environment (MEP), initiated the establishment of the "China Carbon Neutral 50 People's Forum" to offer academic references and intellectual support for government decision-making, as well as the development of enterprises and organizations. On June 24, 2021, the Tsinghua University "China Carbon Neutral Economic Policy" seminar, co-hosted by Tsinghua SEM and the Institute for Global Development of Tsinghua University, took place in Beijing. The event drew numerous experts in the field of carbon neutrality research, who engaged in in-depth discussions



about a number of issues related to China's carbon neutral economic policy. On December 22, 2023, the 2023 Tsinghua University Forum on Carbon Neutral Economy took place. Guided by Tsinghua University and China Petrochemical Corporation (SINOPEC), the forum was co-organized by Tsinghua SEM, Tsinghua University Institute for Carbon Neutrality (ICON, Tsinghua University), and Economic Press China. Participants discussed the path of high-quality development amid the backdrop of "dual-carbon", focusing on the theme of "Carbon Neutrality for High-Quality Development."

3. Optimizing talent training and helping to improve industry

On June 5, 2023, Xiuzhong College of Tsinghua University was established. Tsinghua SEM, as one of the three major supporting departments, actively participated in the preparation, construction and talent cultivation efforts of Xiuzhong College. The college is an entity focusing on undergraduate student education to meet the new demands of talent cultivation in the new era. The mission of Xiuzhong College is to promote the harmonious coexistence of humanity and nature, cultivate leaders in global green development, contribute Tsinghua's expertise to building a community where humans and nature thrive together, and realize the sustainable development for human society.

In August 2021, Tsinghua SEM began its "China ECO Explorer" program to accelerate the formation of a consensus and promote actions among industries and enterprises. The first and second phases of the "China ECO Explorer" program took place in December 2021 and May 2023 respectively, with 96 enterprise leaders from "dual-carbon" and related fields participating as trainees. Half of these trainees represent China's Top 500 private enterprises or Top 500 manufacturing companies. The program aims to establish a high-level platform for industry-academia-research integration, advance research and industrial application of core technologies in the field of carbon neutrality, and contribute to the realization of China's dual-carbon goals.



Moreover, Tsinghua SEM routinely offers a variety of mandatory and elective courses related to sustainable development. These courses cover diverse areas such as the environment, resources, ethics, morality, critical thinking, innovative technologies, entrepreneurship management, law, corporate responsibility, and cross-cultural management. They constitute an integral component of Tsinghua SEM's talent training program.

4. Creating low-carbon campus and renovating existing buildings

Tsinghua SEM has demonstrated a longstanding commitment to sustainable development and environmental protection in its campus construction endeavors. The new buildings are designed with a core focus on low-carbon, green, smart and healthy principles. For instance, Tsinghua SEM new building (Lihua Building) project exemplifies this commitment. From its design phase, the project prioritized low-carbon, green, smart and healthy construction. It comprehensively integrated low-carbon energy-saving technologies and measures, including efficient variable frequency chillers, variable frequency air handling units, heat recovery in pre-cooling air units, fresh air operation in transition season, 1st-Class water-saving sanitary appliances. Due to its exceptional performance in sustainable development, excellence in design, construction and other stages, Lihua Building was awarded the three-star certificate of green building design in 2021. Furthermore, it received LEED Gold certification from the US Green Building Council in 2022, a recognition of its adherence to stringent international standards.

Tsinghua SEM is actively engaged in low-carbon renovation and upgrading of its existing buildings, demonstrating its commitment to sustainability. The renovation project for Tsinghua SEM's Weilun Building is striving for a three-star green building certification. Throughout the process, from design to construction, operation, and maintenance, low-carbon green development is being meticulously implemented. Looking ahead, the school aims to intensify its utilization of renewable energy such as



solar energy. It will take efforts to enhance energy saving measures in buildings, promote the adoption of energy-efficient electrical products, and further reduce building energy consumption and carbon emissions. These initiatives reflect Tsinghua SEM's ongoing commitment to improving the green and low-carbon building spaces.

5. Advocating for a low-carbon life

Tsinghua SEM's commitment to carbon reduction extends beyond its operations to encompass teaching, research, and daily activities. Through initiatives like the Green Campus program, the school has implemented energy-saving and emission reduction measures. These include the adoption of energy-saving lighting, optimization of heating and cooling systems, and the promotion of paperless office practices. Efforts to encourage the use of public transportation and the establishment of waste separation and recycling systems have led to improved the recycling efficiency and reduced reliance on landfills and incineration. The school regularly holds events to encourage teachers and students in water and electricity conservation, promoting alternative transportation like walking or cycling to school, and advocating for the use of reusable tableware.

These initiatives not only instill low-carbon life practices within the campus community, but also disseminate low-carbon concepts and behaviors more broadly. By fostering a culture of environment responsibility, Tsinghua SEM is contributing to the creation of a more sustainable future.



References:

- [1] Huang Yusen. Carbon peaking, carbon neutrality: an extensive and profound economic and social systematic change [J]. International Talent Exchange, 2021, (08): 18-19
- [2] The document titled “Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy” was released [J]. Resources and Human Settlements, 2021 (11): 6
- [3] Sustainable and healthy development of the construction industry helps to achieve the goal of "dual carbon" [J]. Engineering Construction Standardization, 2022 (02): 27
- [4] GB/T 51366-2019, Standard for building carbon emission calculation [S]
- [5] GB/T 2589-2020, General rules for calculation of the comprehensive energy consumption [S]
- [6] DB11/T 1785-2020, Requirements for carbon dioxide emission accounting and reporting Service enterprises [S]
- [7] Beijing Municipal Ecology and Environment Bureau. Beijing Carbon Emission Reduction Methodology for Low Carbon Travel (Trial Version), 2020.
- [8] T/CECRPA 001-2022, Code of practice for large-scale conferences and exhibition low-carbon assessment [S]

