Guanghua Thought Leadership

Guanghua Thought Leadership dives into business practices and education, focuses on the holistic, strategic, and forward-looking questions on China’s social development and economic reform, and has published impactful research findings including business administration courses, books, case studies, reports and white papers. We also deliver applied research findings to policymakers through regular briefs.

Practices of Carbon Neutrality at Guanghua

Through the thinktank platform of Guanghua Thought Leadership, with the foundation of the carbon neutrality practices in China, Guanghua strive to conduct well-structured research. By constructing theoretical paradigm, exploring practical knowledge, and testifying empirical analysis, we aim for pushing beyond the limits of the traditional economic theory and analytical framework, exploiting fundamental changes in economic reasoning during the process of carbon neutrality, and motivating theoretical innovation and paradigmatic breakthroughs.

Guanghua has established the carbon neutrality behavioral lab. The lab will be in partnership with government departments to provide policy recommendations.

Meanwhile, the School ran meetings to discuss the social and economic impact of carbon neutrality, joined by representatives from the government, the academia, and the industry. We successfully hosted an executive panel on ‘Concerted Effort towards Carbon Peaking and Neutrality’.

The School designed a series of training courses such as ‘Strategists in the Age of Carbon Neutrality’ and ‘the Economy and Industry of Carbon Neutrality’ for decision makers, management and frontline personnel in relevant industries.

Guanghua continues to respond to the strategic call of the country, devotes to serve the society with practical expertise, strives to support the carbon peaking and neutrality with solid knowledge. We endeavor to foster pragmatic skills in economics and management education and lead the academic advancement.
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Executive Summary

- Carbon peaking and carbon neutrality are not only climate and environmental issues, but also crucial for social development. Achieving carbon neutrality needs concerted global efforts. As a world-class business school, Guanghua School of Management pledges to play a proactive role in the campaign for carbon neutrality.
- The carbon emissions (carbon footprint) of an organization include organizational carbon footprint (Scope 1 and 2) and supply chain footprint (Scope 3). In 2021, Guanghua School of Management’s carbon emissions are 109.74 tCO₂Eq, 4478.79 tCO₂Eq, and 518.47 tCO₂Eq by Scope 1, 2 and 3 respectively, in total of 5107 tCO₂Eq.
- As one of the concrete measures to promote carbon neutrality and fulfill the social responsibility of sustainable development, Guanghua School of Management will publish the carbon footprint report annually. The School aims to achieve carbon peak by 2025 and carbon neutrality by 2035.
- Guanghua will initiate a basket of innovations and reforms, including conducting original research in economic and management theory and policy, establishing a carbon neutrality behavioral lab, educating change-makers in related industries, advocating a low-carbon culture and lifestyle, innovation in its operation model, and saving energy on our premises.
Introduction

In September 2020, President Xi Jinping proposed at the 75th General Debate of the United Nations General Assembly a timetable for China to reach peak carbon emissions and carbon neutrality, that is, to strive to reach peak carbon dioxide emissions by 2030 and to achieve carbon neutrality by 2060. In the Outline of the 14th Five-Year Plan for Economic and Social Development and Long-range Objectives Through the Year 2035 of the People’s Republic of China, China again emphasizes “actively addressing climate change” and calls for “implementing the 2030 target for independent national contribution to addressing climate change and formulating an action plan to achieve peak carbon emissions by 2030”.

With China’s modernization, building a harmonious system of natural resources, ecology and economic development have become an important goal of the times. In 2021, President Xi Jinping proposed the concept of a new form of civilization in his speech at the conference celebrating the centenary of the founding of the CCP, pointing out that China has adhered to and developed socialism with Chinese characteristics, promoted the coordinated development of material, political, spiritual, social, and ecological civilizations, creating a new path of modernization with Chinese characteristics and a new form of civilization.

The construction of an ecological civilization is one important aspect for China’s sustainable development. Carbon peaking and carbon neutrality are not only climate and environmental issues, but also crucial for social development. Promoting carbon peaking and carbon neutrality is of great significance to implementing the new development concept, building a new development paradigm, and motivating the development of China’s economy and society. Sustainable development entails profound changes in the pattern and momentum of China’s economic growth, and is expected to drive China’s future modernization, leading China’s economic and social development to a healthier and more sustainable trajectory.
I. Carbon Peak and Carbon Neutrality Targets for Guanghua School of Management, Peking University

Carbon peaking and carbon neutrality entail widespread and profound economic and social reforms, serving as a powerful motor for future development. Low-carbon or zero-carbon strategies can impact the production, distribution, and consumption under the new paradigm, thus creating a green and low-carbon development framework and economic system.

It is the motto of Guanghua School of Management to “advance management knowledge and develop business leaders for China and the global society”. As a world-class business school, we strive to provide responsible economic and management education and research. In response to the national goal of reaching the peak carbon emission by 2030 and carbon neutrality by 2060, Guanghua measured its carbon emissions in 2021, taking into account the availability of energy-saving strategies and the development plan of the School, we set the target to achieve carbon peak by 2025 and neutrality by 2035.

Carbon peaking and neutrality are a global consensus as well as a challenge for global governance. Approximately 200 countries have announced net zero carbon or carbon neutrality targets. Guanghua School of Management actively participates in the research, teaching, and practice of carbon goals, and incorporates these measures into its strategic plans. Guanghua School of Management will publish its carbon footprint report every year to serve its mission to promote social progress, take the social responsibility to build a low-carbon society, and call for supervision from the public. The School will harness its low-carbon initiation with tighter control of emissions in its daily operation and encourage more people to join our quest for a greener future. We hope the carbon footprint report can set up an example for the public and promote societal-wide recognition of the low-carbon lifestyle.

II. Carbon Footprint Calculations

(I) Scope of analysis

Carbon footprint refers to the carbon emissions associated with an organization, good or service over a specific period. It includes direct emissions from the organization’s offices (e.g., emissions from consumption of fossil fuels) and those associated with electricity usage. An organization’s carbon footprint may also include other indirect carbon emissions, such as those associated with the production, transportation, distribution, and disposal of raw materials. Measuring an organization’s
carbon footprint begins with determining the scope of analysis, followed by data collection and calculations with emission conversion factors.

The first step in measuring an organization’s carbon footprint is to determine its scope of measurement. According to the international standard for greenhouse gases (ISO 14064-1), an organization’s carbon footprint can be divided into organizational carbon footprint (Scope 1 and Scope 2) and supply chain footprint (Scope 3).

Scope 1 is the direct emissions from activities within the organization’s control, including the combustion of various fuels, leakage of greenhouse gases such as air conditioning refrigerants, emissions from manufacturing processes, and emissions from company vehicles.

Scope 2 is the indirect emissions from the purchase and use of electricity, heating, steam, etc., which cannot be directly managed but are brought by the organization’s operations.

Scope 3 considers all emissions from activities related to the organization that are not included in Scope 1 and 2. Scope 3 can include many aspects, and most organizations focus on emissions from raw material extraction and processing, purchased products and services, employee commuting, and business travel.

According to ISO 14064-1, an organization must include Scope 1 and Scope 2 when measuring its carbon emissions, while due to the complexity of its boundary definition and the difficulty of obtaining data, items included in Scope 3 emissions may vary by institution.

**Figure 1: Scope of analysis for a product or organization’s carbon footprint**

*Source: Team analysis*

**II) Methodology**

After determining the scope of analysis, one needs to collect emissions data from each source and
convert them into “metric tons of carbon dioxide equivalents” (MTCO$_2$ Eq or MTCDE).

Each greenhouse gas has different impact on global warming, so a standardized unit is needed to aggregate the overall effect. Since carbon dioxide is the most common greenhouse gas generated by human activities, equivalents of carbon dioxide become the common unit to measure greenhouse effect from various sources. The emission of each gas is multiplied by its Global Warming Potential (GWP). In this way, the effects of different greenhouse gases can be standardized and aggregated.

When measuring, it is difficult to obtain precise information on the gas emissions. Instead, we measure the emissions related to various production and operation activities, and multiply by respective carbon emission factors, thus converting them into equivalents of carbon dioxides. The carbon footprint of an organization is the sum of all direct and indirect emissions from all activities converted into carbon dioxide equivalents. In other words, carbon footprint = $\sum_{Scope\ 1, 2, 3} Each\ activity \times Emission\ conversion\ factor$, where the emission factor is the average CO$_2$ emissions per unit activity level (such as per km drive, electricity use per kWh, or per ton of water).

**III. Annual Carbon Footprint of Guanghua School of Management**

*(I) Scope of measurement*

The carbon footprint of Guanghua School of Management in 2021 includes carbon emissions associated with the operation and related activities of the main campus in Beijing and the offices outside Beijing.

Based on the standard protocols and the School’s operations, we have defined the scope as follows. Scope 1 includes fuel consumption of the School’s own vehicles and natural gas consumption for heating. Scope 2 includes purchased electricity and heating. Scope 3 includes the business travels of the School’s faculty and staff members, as well as the consumption of tap water and paper. Based on the statistical analysis of the relevant data, we standardized carbon emission from the related activities for ease of calculation.

*(II) Emission factors*

We list the emission factors of relevant energy consumption and activities to match with the abovementioned carbon emission-related activities with specific carbon emissions. Most of these data come from the “Guidelines for Accounting and Reporting of Carbon Dioxide Emissions of Beijing Enterprises (Units)” published by the Beijing Municipal Ecology and Environment Bureau.

<table>
<thead>
<tr>
<th>Category</th>
<th>Emission Factor</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>0.96</td>
<td>kg/kWh</td>
</tr>
</tbody>
</table>

Table 1 Emission factors of major categories of energy consumption
(III) Results

Based on the activities and emission factors mentioned above, we conclude that the total carbon emission of Guanghua School of Management in 2021 was approximately 5107 tCO\(_2\)e. Details of each sub-category are as follows.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Carbon emission equivalence of major categories of energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1</td>
<td>Category</td>
</tr>
<tr>
<td></td>
<td>CO(_2) equivalence (ton)</td>
</tr>
<tr>
<td></td>
<td>Total (ton)</td>
</tr>
<tr>
<td>Scope 1</td>
<td>Gasoline from owned vehicles</td>
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<tr>
<td></td>
<td>0.81</td>
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<tr>
<td></td>
<td>Natural Gas</td>
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<td></td>
<td>108.93</td>
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<tr>
<td>Scope 2</td>
<td>Electricity</td>
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<tr>
<td></td>
<td>3916.06</td>
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<tr>
<td></td>
<td>Heating</td>
</tr>
<tr>
<td></td>
<td>562.73</td>
</tr>
<tr>
<td>Scope 3</td>
<td>Taxi (Business Travel)</td>
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<td></td>
<td>86.46</td>
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<td>Train (Business Travel)</td>
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<td>Flight (Business Travel)</td>
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<td>235.04</td>
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<td>Paper</td>
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<td></td>
<td>165.43</td>
</tr>
<tr>
<td></td>
<td>Water</td>
</tr>
<tr>
<td></td>
<td>25.26</td>
</tr>
<tr>
<td>Total (ton)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5107</td>
</tr>
</tbody>
</table>
IV. Guanghua’s Action Plans for Carbon Neutrality

Guanghua’s action plans for carbon emission reduction are multi-fold and evolving. They currently include:

(I) Research and policy recommendations

Carbon neutrality poses a fundamental challenge to the adaptability of traditional economics to the new form of civilization. Economic and management theories are often based on assumptions from...
the industrial civilization and cannot effectively respond to the contemporary call for carbon neutrality. Academic research on the social and economic impact of carbon neutrality is emerging.

Maintaining stable and sustainable GDP growth remains an important strategic mission for China in the next 40 years of economic and social development. How to strike a balance between sustained economic growth and reduced emissions, thus achieving both high-quality economic development and carbon neutrality, poses a great challenge for China in the future.

Through Guanghua Thought Leadership platform, a series of research has been planned out around the carbon targets, in areas such as macroeconomics, economic structure and industrial evolution, carbon price formation and carbon trading design, enterprise reform and family consumption. These projects are guided by the “dual carbon” target, focus on the primary issues, define key scientific questions, and promote the development of carbon neutral economics and business administration with theoretical, practical, and empirical analysis.

Based on the abovementioned research, Guanghua will strive for theoretical breakthroughs in the field of economics and management, establish the carbon neutrality behavioral lab, provide policy recommendations for the technological footpaths and toolbox to achieve the carbon targets; and present our solid research in public discussions through forums and press publications.

(II) Train talents in low carbon industries and explore sustainable growth path for enterprises

As an important part of national development strategy, carbon neutrality is also a microscopic issue. A crucial question is how to incorporate micro units of economic life - enterprises and individuals - in the process of advancing carbon neutrality, incentivize them to reduce emissions, and promote innovation in low-carbon and zero-carbon technology. We shall prepare business leaders for the age of low-carbon and zero-carbon innovation and business model. We hope to nudge consumers to establishing low-carbon and zero-carbon lifestyles, which may shift consumers’ utility functions.

Based on our research, we will update our curriculums to account for aspects such as carbon trading, innovation mechanisms, technology breakthrough, international cooperation, low-carbon enterprise management and low-carbon investment education. We believe that such curriculums will help nurture talents who will devote themselves to transforming all industries in a sustainable manner. The business leaders will gain a deeper understanding of the carbon neutrality goals and find effective solutions for their enterprises to reach these targets.

(III) Advocate a change in values towards low-carbon lifestyles

Guanghua School of Management always emphasizes the cultivation of students’ moral values, and sets firm the entrepreneurial responsibility, social responsibility, and national mission at the foundation of education. Since its establishment over 30 years ago, Guanghua has had 30,000 alumni in all fields. We will launch a low-carbon initiative among Guanghua faculty, staff, students, and alumni. The initiative pictures an environmental-friendly lifestyle, which consists of electricity
saving, paperless office, public transit, etc. We hope to influence the public opinion and behavior, motivating more people to build an energy-saving society together.

**IV Adjust operation model with integrated planning and development**

Guanghua’s action plans not only reflect our determination to respond to major national strategies but also urge the School to build a new development paradigm. As technology progresses, we are actively undertaking comprehensive digital transformation in our systematic reform towards Digital Guanghua. These measures will enhance our operational efficiency, as well as reduce our carbon footprint efficiently. The latter is achieved by innovations in the business education model and integration of low- and negative-carbon concepts and practices into teaching, research, operations, social services, and other related activities.

**V Pilot Green buildings and energy-saving equipment**

The main sources of carbon emissions of Guanghua are from the office buildings. In the future, we will vigorously develop green premises and carry out pilot projects of “carbon neutral” buildings giving the feasibility. Specifically, we will make carbon-reducing improvements to existing buildings and construct new buildings as low-carbon buildings. For example, we will make full use of solar photovoltaic power and other forms of clean energy to replace purchased coal-generated electricity in the buildings, build renewable energy projects, and purchase green power directly from powerplants.

We will also call for energy-saving renovation and transformation of the School and replace equipment and devices that produce direct emissions with zero- or low-carbon models. Possible actions include replacing fuel vehicles with hybrid or new energy vehicles, using energy-efficient electric appliances, etc., to achieve the goal of improving energy efficiency and reducing carbon emission.

**VI Initiate emission-reduction projects and plant trees to increase carbon sinks**

By granting paid leaves and introducing guidelines for low-carbon behavior, we encourage all faculty and staff to participate in activities that preserve the environment, such as increasing forestation in areas that Guanghua is assisting or in partnership with. It can help the revitalization and construction of ecological civilization in these areas, and effectively increase ecological carbon sinks to neutralize carbon emissions in our teaching and operations.
Reference


